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CAI
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71

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CANADIAN COMMITTEE ON OCEANOGRAPHY

COMITÉ D'Océanographie du Canada, OTTAWA, ONTARIO

Consent publication

CG-1

OCEANOGRAPHIC
DIRECTORY
AND
PROJECT FORECASTS
1969 - 1970

ARCTIC - ATLANTIC - PACIFIC



(1)

CAI
EP740
- 412

CANADIAN PUBLICATION
DIRECTORY AND PROJECT FORECASTS 1969-1970
THE GREAT LAKES AND OTHER LARGE LAKES

May be obtained on application to:

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DIRECTORY AND PROJECT FORECASTS 1970
THE GREAT LAKES

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OCEANOGRAPHIC DIRECTORY
and
PROJECT FORECASTS 1969-1970

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PREFACE

This Oceanographic Directory and Project Forecast combines the two years of 1969 and 1970, partly because of an inadvertent delay in compiling and printing the 1969 issue, and partly because it was considered that the contents of the Directory do not change enough from year to year to warrant annual issues. In that sense, this is a test production to see if it adequately meets the needs of the oceanographic community.

The arrangement of the present volume is a departure from that of previous volumes in a number of aspects. An effort has been made to retain the regional aspect of previous compilations, but the contributing agencies are given in alphabetical order. Also, within projects of each contributing agency, the arrangement is in alphabetical order of scientist-in-charge or of the first-listed scientist. This provides a convenient way of locating the work of a given agency or of a scientist, if his affiliation is known, by scanning the table of contents.

All scientists listed on the Project Forecasts are indexed alphabetically in the Scientist Index. Place names are listed alphabetically in the Geographical Names Index. The subject matter is indexed in the Project Index. No attempt was made to classify the activities in the way it was done in past volumes. However, it is hoped that the simple, conventional indexing scheme, using the Key-Word System, will facilitate locating needed Project Forecasts.

M. Waldichuk.



PROJECT NAME Baffin Bay - North Water Project			
LOCATION(S) Northern Baffin Bay and adjacent islands			
AGENCY The Arctic Institute of North America			
PRINCIPAL COOPERATING AGENCIES: Marine Sciences Centre, Dept. of Geography and Meteorology, McGill Univ.; Dept. of Oceanography, Univ. of Washington; Dartmouth College, N. H.; PCSP & IWB, Dept. of Energy, Mines and Resources; Defence Research Board; U. S. Coast Guard, Office of Naval Research, and National Science Foundation; Bedford Institute of Oceanography, N. S.; National Museum of Natural Sciences.			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1967	Indefinite	PROFESSIONAL 4 SUPPORT SERVICES ... 2 ...
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S)) (MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>A comprehensive study is being undertaken of the "North Water", that area in northern Baffin Bay which generally remains unfrozen or lightly ice covered during the winter, and forms a center of ice disintegration and removal during the summer. The primary objective of the study is to determine the cause of the "North Water" and, if the findings so warrant, to expand the study into a thorough system, including water exchanges with the Arctic and Atlantic oceans and effects on the surrounding land areas.</p> <p>Field work in the Lincoln Sea (June 1967), Kane Basin (June 1968 & 1969) and in Smith Sound (September 1968) and off Cape York (September 1969) has been completed to date. The former three projects involved "through the ice" operations and the latter two were undertaken from a U. S. icebreaker. Four programs reports are available on work accomplished to date and are available through the Arctic Institute. Planning for 1970 includes a ship of opportunity program in March or April in northern Baffin Bay and an icebreaker program in August off Lancaster Sound.</p> <p>In addition to the marine programs, investigations of the heat balance of the North Water and the glacioclimatological relationship between North Water and the Devon Island ice cap are planned for 1970.</p>			
		Dr. E. Vowinckel, Dr. F. Miller, and Dr. M.J. Dunbar - McGill University Dr. L.K. Coachman - Univ. of Washington	
		→ SCIENTIST IN CHARGE:	
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME

Arctic Geophysics

LOCATION(S)

Waters between Greenland and Canada and Canadian Arctic Islands

AGENCY

DEM&R, MSB, Atlantic Oceanographic Laboratory, B.I.

PRINCIPAL COOPERATING AGENCIES

Marine Geophysics Group
Geological Survey of Canada
Geographical Branch, DEM&R
Dalhousie University, Halifax, N.S.

DATE:

FROM

6/64

TO

continuing

EFFORT (IN MAN YEARS)

PROFESSIONAL

3

SUPPORT SERVICES

2

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Gravity, magnetic and seismic methods are used to study the type of crust, depth of sedimentary section and geological structure in the upper part of the crust.

Since 1964, most of the Nares Strait area has been covered by total magnetic field measurements and in 1970 it is planned to carry out a crustal seismic program in Baffin Bay and to acquire sufficient gravity and continuous profiling data to assess the major crustal features of the area as part of the Hudson 70 project.

D.I. Ross

→ SCIENTIST IN CHARGE: D.L. Barrett K.S. Manchester

THIS SPACE FOR CCO INDEXING



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969-1970

PROJECT NAME Operation Tanquary Oceanography		
LOCATION(S) Fiords and coasts of northern Ellesmere Island		
AGENCY DND/DRB/DREO		
PRINCIPAL COOPERATING AGENCIES <ol style="list-style-type: none"> 1. McGill University 2. Smithsonian Institution 3. University of Arizona 		
DATE: 1950	FROM Indefinite	TO Indefinite
		EFFORT (IN MAN YEARS)
		PROFESSIONAL 3
		SUPPORT SERVICES 3
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)		
<p>Exploratory physical oceanographic measurements have been made in the Hallam Sound fiord system and off the north coast of Ellesmere Island. The work provides an overall picture of the waters in this region of the Arctic. At the same time detailed investigations have been carried out in areas of special interest.</p> <p>Marine biological work has been carried out in Tanquary, Hare and Otto fiords, and in Eureka Sound.</p> <p>Studies in ice physics have been made at Tanquary Fiord on degeneration of an ice cover, albedo effects and acoustic attenuation.</p> <p>In 1970 it is planned to extend the exploratory oceanographic work to the west side of Axel Heiberg Island, and to make detailed investigations in the Eureka Sound area.</p>		
G. Hattersley-Smith		
→ SCIENTIST IN CHARGE: -----		
THIS SPACE FOR CCO INDEXING		



PROJECT FORECAST 1969 - 1970

PROJECT NAME			
Operation Tanquary Oceanography			
LOCATION(S)			
Fiords and coast of Northern Ellesmere Island			
AGENCY			
DND, DRB, Defence Research Establishment, Ottawa			
PRINCIPAL COOPERATING AGENCIES			
1. Defence Research Board (Geophysics) 2. McGill University 3. Smithsonian Institution 4. University of Arizona			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1950	Indefinite	PROFESSIONAL .. 3..... SUPPORT SERVICES .. 3.....
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>A program of exploratory physical oceanographic measurements is being carried out in the Nansen Sound - Greely Fiord systems, and around the north and east coasts of Ellesmere Island. This work is aimed at gaining an overall picture of the waters in this region of the Arctic.</p> <p>The exploratory phase is now close to completion. Detailed investigations will be carried out in those areas of interest which have developed as a result of those preliminary investigations.</p> <p>A series of stations will be occupied off the north coast in 1969 by a party travelling by light aircraft.</p> <p>Marine biological work has been carried out in Tanquary Fiord, Hare Fiord, Otto Fiord and the mouth of Eureka Sound at Greely Fiord. This work will be continued.</p> <p>In addition studies will be directed to air/ice/water interface and the factors which affect the ice cover degradation and which will affect surface and submarine navigation in the areas of concern.</p> <p>For 1969 the investigation will be aimed at occupying a series of stations along the north coast of Ellesmere and Axel Heiberg Islands so as to determine the origin of bottom and intermediate waters in these northern fiords and the Nansen system.</p>			
SCIENTIST IN CHARGE: G. Mattersley-Smith			
THIS SPACE FOR CCO INDEXING			

CANADA

PROJECT NAME Gravity and Geodetic Studies			
LOCATION(S) Arctic continental shelf and ocean basin Atlantic continental shelf Pacific continental shelf and ocean			
AGENCY DEM&R Observatories Branch, Dominion Observatory			
PRINCIPAL COOPERATING AGENCIES <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div style="width: 45%;"> Polar Continental Shelf Project) Marine Sciences Branch) Geological Survey of Canada) </div> <div style="width: 50%;"> Defence Research Board Dept. of Transport University of British Columbia </div> </div>			
DATE: 1960	FROM Continuing	TO 	EFFORT (IN MAN YEARS) <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div style="width: 60%;"> PROFESSIONAL SUPPORT SERVICES </div> <div style="width: 35%; text-align: right;"> 6 5 </div> </div>
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S) MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p><u>Gravity Studies of the Earth's Crust and Upper Mantle and Geodetics</u></p> <p>Gravity, magnetic, bathymetric and continuous seismic profiling (CSP) measurements are made on the sea ice and over the ocean using surface and underwater instruments to provide data for (1) geophysical studies of the structure of the earth's crust and upper mantle, (2) geodetic investigations, and (3) for the petroleum and mineral exploration industries.</p> <p>Systematic mapping is carried out during all seasons using either land based or ship-borne helicopters in the Arctic and ships carrying underwater or surface gravimeters in the Pacific and Atlantic oceans.</p> <p>Special equipment: gravimeters, marine magnetometers, CSP equipment, winches, depth measuring devices, heat flow and bottom sampling equipment, refraction seismic equipment, satellite navigation system and Decca.</p> <p>In 1970 collection, reduction, interpretation and publication of the data will continue. Particular emphasis will be given to (1) completing regional gravity measurements of the Beaufort Sea from the sea ice surface, (2) underwater gravimeter measurements on the continental shelf off the Nova Scotia coast, and (3) surface gravity measurements off the British Columbia coast in co-operation with the Hudson 70 program of the Bedford Institute.</p> <div style="text-align: right; margin-top: 20px;"> M.J.S. Innes, Chief, Gravity Division Dominion Observatory. </div> <div style="text-align: center; margin-top: 10px;"> —————→ SCIENTIST IN CHARGE </div>			
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1970

PROJECT NAME

Frobisher Bay arctic ecology study

LOCATION(S)

Frobisher Bay, N.W.T.

AGENCY

FRB, Arctic Biological Station

PRINCIPAL COOPERATING AGENCIES

DATE:

FROM

TO

EFFORT (IN MAN YEARS)

1967

Indefinite

PROFESSIONAL

...2.0...

SUPPORT SERVICES

.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

A study is being carried out on the biology of phytoplankton and zooplankton, physical and chemical properties of the environment and production rates of plant and animal plankton in 50 meters of water near the head of Frobisher Bay, Baffin Island. Standard procedures are used during the open-water season from a station vessel, and during the ice-cover season from a temporary shelter on the sea ice.

→ SCIENTIST IN CHARGE: E.H. Grainger

THIS SPACE FOR CCO INDEXING

1969-197

PROJECT NAME			Bathurst Inlet Survey
LOCATION(S)			Bathurst Inlet, N.W.T.
AGENCY			FRB, Arctic Biological Station
PRINCIPAL COOPERATING AGENCIES			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1969	1972 and 1973	PROFESSIONAL 1.5 SUPPORT SERVICES
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>The hydrography of Bathurst Inlet is being examined as it relates to the survival of 'relict' or geographically isolated species of fish. Measurements and samples are taken from the M.V. <u>Salvelinus</u> during the summer months and from the ice surface during the late spring and early summer. Standard equipment and techniques are used for collecting data on temperature, salinity, oxygen and zooplankton. Collection gear consists of trawls, dredges, grabs, seines, traps and gill nets.</p>			
J. G. Hunter —————→ SCIENTIST IN CHARGE: -----			
THIS SPACE FOR CCO INDEXING			



CANADA

CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1970

PROJECT NAME

Cambridge Bay Productivity Study

LOCATION(S)

Starvation Cove, Victoria Island

AGENCY

FRB, Arctic Biological Station

PRINCIPAL COOPERATING AGENCIES

DATE:

FROM

1966

TO

1969

EFFORT (IN MAN YEARS)

PROFESSIONAL . . . 3.0

SUPPORT SERVICES

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Biological, physical and chemical studies of the marine area offshore from Starvation Cove to determine the production of planktonic forms and standing crop and production of benthonic invertebrates and fishes. Standard equipment and techniques are used for collecting data on temperature, salinity, oxygen, chlorophyll, phytoplankton, zooplankton, phosphates, nitrates and carbon assimilation (C^{14}). Benthonic forms are collected in trawls, dredges and grabs. Fish are collected by otter trawl and stramin nets. Hydrographic measurements are taken weekly from the M.V. Salvelinus during the open-water season and from the ice surface during the late spring and early summer.

—————→ SCIENTIST IN CHARGE: J. G. Hunter

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CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1970

PROJECT NAME

Mobile Arctic Oceanographic Laboratory - Field Trials

LOCATION(S)

Greely Fiord, N.W.T.

AGENCY

Dept. of Energy, Mines & Resources, Marine Sciences Branch

Frozen Sea Research
Group

PRINCIPAL COOPERATING AGENCIES

DATE:

FROM

1969

TO

1970

EFFORT (IN MAN YEARS)

PROFESSIONAL

.1.....

SUPPORT SERVICES

.2.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

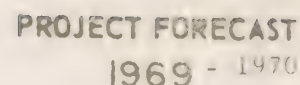
Field trials of a complete engineered system for the acquisition of oceanographic data during the Arctic winter will be made over the sea ice of Greely Fiord, extending towards Nansen Sound. Both living and scientific laboratory facilities will be tested in the extended trials. The elaborate navigation and orientation features of the tracked vehicle system will be further evaluated.

Using this system, it is hoped to acquire detailed temperature, salinity and other oceanographic information in this region, such as might be acquired from a ship at lower latitudes.

Dr. E. L. Lewis

→ SCIENTIST IN CHARGE: -----

THIS SPACE FOR CCO INDEXING

[illegible]



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969- 1970

PROJECT NAME Microclimate of the sea ice-water interface

LOCATION(S) Greely Fiord, N.W.T. and Laboratory

AGENCY Dept. of Energy, Mines & Resources, Marine Sciences Br., Frozen Sea Research Group

PRINCIPAL COOPERATING AGENCIES

DATE:	FROM	TO	EFFORT (IN MAN YEARS)
1969		continuing	PROFESSIONAL 1 SUPPORT SERVICES 1

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

This study is directed towards a detailed understanding of the freezing process. It is being approached both from the oceanographic viewpoint, which regards brine drainage from the ice as the primary cause of vertical circulation below the ice, and from that of ice physics which seeks to determine more exactly the topography of the ice-water interface and brine occlusion in relation to crystal structure and the theory of constitutional supercooling. Present experimental work involves temperature measurements at an accuracy of $\pm 0.002^{\circ}\text{C}$ in the vicinity of the interface, dye injection optical techniques to investigate brine streamers, and analysis of the ice structure and brine content near the interface. Theoretical work is directed to a better description of the convective motion of brine in small tubes in the ice at the interface.

Laboratory experiments are presently being carried out to supplement field observations by allowing more exact control than field conditions permit. The range of parameters such as salinity and growth rates may also be extended beyond values naturally occurring in order to verify theoretical models.

→ SCIENTIST IN CHARGE: Dr. E.L. Lewis

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST 1969-1970

[illegible]



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME

Ice Drift Models

LOCATION(S)

Hudson Bay

AGENCY Department of Energy, Mines and Resources
Marine Sciences Branch, Oceanographic Research, Ottawa, Ontario

PRINCIPAL COOPERATING AGENCIES

The relevant data is obtained from the Meteorological Branch of the Federal Department of Transport.

DATE:

FROM

January

TO

December

EFFORT (IN MAN YEARS)

PROFESSIONAL 1 - Scientist
1 - Programmer
SUPPORT SERVICES

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

The purpose of this project is to develop numerical models for calculating ice drift in the Hudson Bay. The topography will be taken into account and thus this will be substantial improvement over the present models in which a layer of no motion is assumed. Also, the effect of the tide (in creating times of convergence and divergence) will be incorporated.

→ SCIENTIST IN CHARGE: T.S. Murty

THIS SPACE FOR CCO INDEXING



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1970

PROJECT NAME

Oxygen minimum layer - Beaufort Sea.

LOCATION(S)

Arctic Ocean - Ice Island T-3.

AGENCY

Marine Sciences Centre. McGill University.

PRINCIPAL COOPERATING AGENCIES

Naval Arctic Research Laboratory. Point Barrow, Alaska.

U.S. Office of Naval Research.

DATE:

FROM

1967

TO

continuing

EFFORT (IN MAN YEARS)

PROFESSIONAL

...2.....

SUPPORT SERVICES

.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

A distinct oxygen minimum occurs at the pycnocline between the Pacific and Atlantic water masses of the north and central Beaufort Sea Gyral. Several possible causes have been examined, however the only one which seems satisfactory is that layer of no motion exists at the shear of two opposing circulations. A mathematical model is being created to explain the phenomenon. Publication of results is anticipated in early 1970.

→ SCIENTIST IN CHARGE: W.J. Hansen

THIS SPACE FOR CCO INDEXING



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1970

PROJECT NAME

Acoustic Properties of Ice

LOCATION(S)

Tanquary Fiord, Ellesmere Island and Laboratory, McGill.

AGENCY

Marine Sciences Centre, McGill University,

PRINCIPAL COOPERATING AGENCIES

Office of Naval Research, Defence Research Board.

DATE:

FROM

TO

EFFORT (IN MAN YEARS)

January 1, 1969

December 31, 1970

PROFESSIONAL

0.9.....

SUPPORT SERVICES

1.1.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Acoustic attenuation in sea ice is measured in the laboratory along vertical and horizontal paths as a function of frequency (20-400 kHz). Similar field measurements will be made, to lower frequencies. In addition, attempts will be made to measure reflection coefficients of sound waves impinging from the water on the ice-water interface. The field season will be mid-April to mid-June.

Measurements of the reflection coefficient of sound waves impinging from the water on the lower (water-ice) interface of a cover of sea ice will be made as a function of angle of incidence and for a number of frequencies between 20kHz and 400 kHz. The field season will be from mid-April to mid-June.

→ SCIENTIST IN CHARGE: E.R. Pounder & M.P. Langleben

THIS SPACE FOR CCO INDEXING

ATLANTIC



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME			Hudson 70 - CHEMISTRY
LOCATION(S)			North South Sections in Atlantic and Pacific Oceans
AGENCY			Atlantic Oceanographic Laboratory
PRINCIPAL COOPERATING AGENCIES			
Atlantic Oceanographic Laboratory Dalhousie University Marine Ecology Laboratory of Fisheries Research Board			
DATE:	FROM	TO	EFFORT (IN MAN YEARS) 2 x 6 months.
	November, 1969	June, 1970	PROFESSIONAL SUPPORT SERVICES ... 1/2 ...
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>To measure some of the major chemical parameters involved in the oxidative and carbonate systems of the surface and deep waters of the Atlantic and Pacific Oceans: O₂, pH, alkalinity, total CO₂ dissolved, atmospheric CO₂, equilibrated and partial pressure of surface CO₂, Nitrate, Phosphate and Silicate. The object is to make precise and consistent measurements of these quantities using the most recent proven techniques.</p>			
			A.R. COOTE - I. DUEDALL
JOINT OPERATION:			SCIENTIST IN CHARGE: -----
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969 - 1970

PROJECT NAME

Mooring Techniques

LOCATION(S)

North West Atlantic

AGENCY

DEM & R, Atlantic Oceanographic Laboratory, Bedford Institute

PRINCIPAL COOPERATING AGENCIES

Fisheries Research Board

DATE:

FROM

1967

TO

Indefinite

EFFORT (IN MAN YEARS)

PROFESSIONAL

.1.....

SUPPORT SERVICES

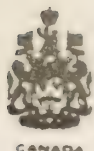
.1.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

To develop techniques and a system for improving reliability of mooring and recovering recording packages such as current meters, temperature and pressure recorders, by utilizing acoustic and time release devices, acoustic transponders, and radio beacons, etc. To evaluate and develop techniques for the use of moored instruments such as current meters, temperature recorders, etc.

→ SCIENTIST IN CHARGE: D. Delaney

THIS SPACE FOR CCO INDEXING



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969-1970

PROJECT NAME Study of Internal Waves of Tidal Period			
LOCATION(S) <div style="text-align: center; padding-top: 10px;">St. Lawrence estuary between Ile Verte and Pte. des Monts</div>			
AGENCY DEM&R, MSB, Atlantic Oceanographic Laboratory, B.I.			
PRINCIPAL COOPERATING AGENCIES			
DATE:	FROM 1968	TO	EFFORT (IN MAN YEARS) <div style="display: flex; justify-content: space-between; align-items: flex-end;"> <div> PROFESSIONAL SUPPORT SERVICES </div> <div style="text-align: right;"> <div style="display: flex; align-items: center;">1</div> <div style="display: flex; align-items: center;">2</div> </div> </div>
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>Study of current and oceanographic and current measurements taken in 1963 and 1965 in the St. Lawrence estuary indicate that an internal wave of tidal period is produced in the estuary by the abrupt shallowing near Ile Verte and that this internal wave strongly influences the surface tidal streams.</p> <p>In 1969 a mathematical model for this phenomenon is being checked by making current observations at sites along the channel of the estuary between Ile Verte and Pte. des Monts. Sets of observations were taken in spring and in fall to sample the currents under different conditions of stratification. The data will be analysed and reported upon in 1970.</p>			
<div style="display: flex; justify-content: space-between; align-items: center;"> <div> → SCIENTIST IN CHARGE. </div> <div> W.D. Forrester </div> </div>			
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969- 1970

PROJECT NAME

Experimental studies of wind driven and thermohaline circulation

LOCATION(S)

Atlantic Ocean

AGENCY

DEM&R, MSB, Atlantic Oceanographic Laboratory, B.I.

PRINCIPAL COOPERATING AGENCIES

Ocean Circulation Group
Fisheries Research Board of Canada
Woods Hole Oceanographic Institution

DATE:

FROM

TO

EFFORT (IN MAN YEARS)

1962

continuing

PROFESSIONAL

.....5.....

SUPPORT SERVICES

.....5.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

This is a continuing study of the current systems in the North Atlantic Ocean, the origin and movement of the deep waters, of cooling and sinking processes, and of mixing processes. Data collection in the past has been by use of standard oceanographic casts of water bottles and thermometers, current measurements by G.E.K. and other standard oceanographic techniques. Equipment is being purchased and developed to allow studies of temporal changes in the ocean using moored systems and continuously recording systems that measure temperature and conductivity continuously as a function of depth. The studies to date have been concentrated on the Gulf Stream, the Labrador Sea, the Denmark Strait, and the intermediate waters off the Continental Shelf east of Nova Scotia.

Current meters will be installed in the Drake Passage in 1970. A study of fine structure in the Antarctic converges will be undertaken at the same time.

A second set of current meters will be placed under the Gulf Stream south of the Grand Banks.

D. Garner

→ SCIENTIST IN CHARGE: C.R. Mann, R. Reiniger,

THIS SPACE FOR CCO INDEXING



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969
1970

PROJECT NAME

Studies of bedrock and surficial geology - Scotian Shelf.

LOCATION(S)

Scotian Shelf

AGENCY DEM&R, MSB, Atlantic Oceanographic Laboratory, Bedford Institute

PRINCIPAL COOPERATING AGENCIES

Marine Geology Section. (Regional Geology)

DATE:

FROM

TO

EFFORT (IN MAN YEARS)

1964

Continuing

PROFESSIONAL

3
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SUPPORT SERVICES

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SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Bedrock Geology - A program to map the near surface structure and stratigraphy of the bedrock underlying the entire Scotian Shelf is being conducted utilizing continuous seismic-reflection profiles and sample data obtained through dredging operations. Profiles representing some 8,000 miles of traverse have been accumulated, and are being interpreted utilizing differences in acoustical characteristics and unconformable relationships to delineate rock units.

Surficial geology - Interpretation of the surficial geology is based upon a detailed study of echograms, examination of bottom samples, continuous seismic-reflection profiles, radiogenic ages and palaeontological data. Work currently in progress will provide surficial geological coverage for the whole of the Scotian Shelf, and Northumberland Strait and Georges Bay.

Regional Geology - Lewis H. King
Brian MacLean
Kate Kranck

SCIENTIST IN CHARGE: L. H. King

THIS SPACE FOR CCO INDEXING



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969- 1970

PROJECT NAME

Canso

LOCATION(S)

Strait of Canso and Approaches

AGENCY

DEM&R, MSB, Atlantic Oceanographic Laboratory, Bedford Institute

PRINCIPAL COOPERATING AGENCIES

Fisheries Research Board
Federal Department of Fisheries

DATE:

FROM

1968

TO

1970

EFFORT (IN MAN YEARS)

PROFESSIONAL

1

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SUPPORT SERVICES

2

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SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Limited physical oceanographic studies were initiated in the Strait of Canso area in 1968 and detailed studies were undertaken in 1969. The purpose of the program is to determine the circulation dynamics and flushing of the Strait in order to determine the physical capacity of the environment to accept pollutants.

Further monitoring of the environment will be continued in 1970 and perhaps longer.

→ SCIENTIST IN CHARGE: D.J. Lawrence

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST

1969 - 1970

PROJECT NAME			
Tidal Studies			
LOCATION(S)			
Canadian Atlantic			
AGENCY			
DEM&R, MSP, Atlantic Oceanographic Laboratory, Bedford Inst.			
PRINCIPAL COOPERATING AGENCIES			
Fisheries Research Board			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1962	Continuing	PROFESSIONAL 1 SUPPORT SERVICES .. 1
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>To study tidal phenomena in Canadian Atlantic region, primarily within the Continental Shelf, utilizing moored self-recording current meters. Current measurements extend from a minimum of 15 days at all sites to a maximum of several months at others.</p>			
W. J. Lawrence G. H. Seibert			
→ SCIENTIST IN CHARGE			
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME

Continental Shelf and Margins Geophysics

LOCATION(S)

East coast of Canada

AGENCY

DEM&R, MSB, Atlantic Oceanographic Laboratory, B.I.

PRINCIPAL COOPERATING AGENCIES

Marine Geophysics Group
Geological Survey of Canada
Canadian Hydrographic Service

DATE:

FROM

1964

TO

Continuing

EFFORT (IN MAN YEARS)

PROFESSIONAL

. 2

SUPPORT SERVICES

. 2

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

The Canadian Hydrographic Service offshore charting program presents an ideal opportunity for collection of geophysical data for study of the structure, composition and geological history of the Continental Shelf and margins. Excellent navigational control provides an opportunity for shipboard gravity and magnetometer surveys and routine nature of the operations makes it possible to carry out the bulk of data reduction on board with shipboard computers. Additional seismic experiments and extension of survey lines beyond the hydrographic surveys are carried out by the Geophysics Group.

B.D. Loncarevic

→ SCIENTIST IN CHARGE: G.N. Ewing

THIS SPACE FOR CCO INDEXING



CANADA

CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969-1970

PROJECT NAME			Mid - Atlantic Ridge near 45°N		
LOCATION(S)			1 - 3° degree wide strip from the Grand Banks of Newfoundland to Longitude 20°W.		
AGENCY			DEM&R, MSB, Atlantic Oceanographic Laboratory, Bedford Institute		
PRINCIPAL COOPERATING AGENCIES			Geological Survey of Canada Marine Geophysics Group Institute of Oceanography, Dalhousie Cambridge University, England University of Toronto		
DATE:	FROM	TO	EFFORT (IN MAN YEARS)		
	1965	Continuing	PROFESSIONAL 3 SUPPORT SERVICES 2		
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)					
<p>The Mid-Atlantic Ridge is a part of the longest mountain chain on earth. Its general characteristics have been recognized through the work of many reconnaissance expeditions over the last 20 years. A new method of detailed geological and geophysical investigations has been developed. Using precise local navigational aids (moored buoys with radar transponders) a relative positional accuracy of a fraction of a mile can be achieved thus making possible data collection along survey lines spaced one mile apart. The techniques employed in the past include precision bathymetry, gravity, magnetics, rock dredging, sediment coring and bottom photography. In addition to these, a time-term seismic experiment was carried out in 1968. The long term objective of this program is to complete the geotraverse from Newfoundland eastwards beyond the crest of the Mid-Atlantic Ridge.</p>					
<div style="text-align: right;"> B.D. Loncarevic D.I. Ross J. Woodside </div>					
<div style="text-align: right;"> → SCIENTIST IN CHARGE: </div>					
THIS SPACE FOR CCO INDEXING					



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME

Physical Geology

LOCATION(S)

Arctic Ocean and Archipelago, Hudson Bay, Labrador continental shelf,
Grand Banks, Atlantic continental slope, Bay of Fundy.

AGENCY

DEM&R, MSB, Atlantic Oceanographic Laboratory, Bedford Institute

PRINCIPAL COOPERATING AGENCIES

Marine Geology Section, Dominion Observatory, Institute of Oceanography,
Dalhousie Univ., Geological Survey of Canada, Marine Sciences Centre -
McGill Univ., Memorial Univ., Nfld., Queen's Univ., Canadian Coast
Guard, McMaster Univ.

DATE:

FROM

1959

TO

Indefinite

EFFORT (IN MAN YEARS)

PROFESSIONAL

.....5.....

SUPPORT SERVICES

.....1.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Geological investigations are made in sedimentology, geomorphology and bedrock, and to the inter-relations between the sea bottom and the overlying waters. General features of the bedrock such as mineralogy, petrology, stratigraphy and structure are related to the physiographic development of an area as well as to the distribution of the sediments. Certain factors of physical oceanography are considered, particularly in sedimentological studies, and these may also include observations on chemical parameters in order to present a total environmental picture. Data are gathered from ice platforms, ships, helicopters and boats. Field equipment including corers, bottom grabbers, trawl dredges, SCUBA diving gear, echo-sounders seismic sub-bottom profilers, and underwater television and photography. Laboratory techniques involve interpretation of graphical records made at sea, textural and mineralogical analyses of the sediments, and wet and spectrochemical analyses on both organic and inorganic constituents.

Arctic & Hudson Bay Project
Labrador Shelf & Ungava Bay
West Indies seamounts
Southwestern Scotian Shelf
Coastal erosion, Atlantic Provinces

- B.R. Pelletier
- A.C. Grant
- J.I. Marlowe
- G. Drapeau
- V. Asthana

→ SCIENTIST IN CHARGE: J.I. Marlowe

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST

1969 - 1970

PROJECT NAME		Data Acquisition and Reduction Systems - Air-Sea Interaction	
LOCATION(S)			
Dartmouth, N.S.			
AGENCY			
DM&E, MSB, Atlantic Oceanographic Laboratory, Bedford Inst.			
PRINCIPAL COOPERATING AGENCIES			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1966	Continuing	PROFESSIONAL SUPPORT SERVICES
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S). MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>The objective of this project is to develop specialized equipment suitable for recording and reduction of data, in Air-Sea Interaction Studies.</p> <p>Because of the need to measure several time dependent variables simultaneously under unusual field conditions, specialized data acquisition and reduction facilities are required. In particular, remote radio controlled instruments must be used under some circumstances. In other cases, data must be recorded at remote locations not accessible to electrical power.</p> <p>Equipment is being developed which permits a single unified system to be employed for a wide variety of air-sea interaction studies. The system prepares field recorded data for direct entry into a digital computer for analysis.</p>			
→ SCIENTIST IN CHARGE			C. S. Maslin
THIS SPACE FOR CCO INDEXING			

PROJECT FORECAST

1969 - 1970

PROJECT NAME			
Halifax Harbour			
LOCATION(S)			
Halifax Harbour and Approaches, Bedford Basin, and Northwest Arm.			
AGENCY			
DEM&R, MSB, Atlantic Oceanographic Laboratory, Bedford Institute			
PRINCIPAL COOPERATING AGENCIES			
National Harbours Board Fisheries Research Board			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1967	continuing	PROFESSIONAL ² SUPPORT SERVICES ³
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>Preliminary investigation of swell entering Halifax Harbour, initiated in 1967 and will be continued in 1970 with the object of gaining basic understanding of the nature of swell entering the Harbour and how its energy is dissipated. Wave gauges are being installed in the harbour and its approaches. The program is being expanded to include an investigation into the physical aspects of the circulation of the harbour and Bedford Basin with direct application to the pollution problems of the area.</p>			
—————→ SCIENTIST IN CHARGE: H. Neu			
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME

Distribution of Fission Products

LOCATION(S)

North Atlantic Ocean and Adjacent Seas.

AGENCY

DEM&R, MSB, A.O.L., B.I.

PRINCIPAL COOPERATING AGENCIES

DATE:

FROM

TO

EFFORT (IN MAN YEARS)

1963

Continuing

PROFESSIONAL

...0.....

SUPPORT SERVICES

...0.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

About 100 samples of approximately 100 litre volume have been collected north of 36° in the Atlantic Ocean for the study of the distribution of bomb-produced radioactive fall-out. The results will provide data of use in ocean circulation studies. Processing of these samples has been postponed awaiting developments in the gamma ray spectroscopy facilities which will materially reduce the large amount of chemical processing previously required.

→ SCIENTIST IN CHARGE: I.M.H. Pagden

THIS SPACE FOR CCO INDEXING



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969 - 1970

PROJECT NAME

Wind Stress, Air-Sea Interaction

LOCATION(S)

Atlantic Ocean Near Halifax, N.S.

AGENCY

DEM&R, MSB, Atlantic Oceanographic Laboratory, Bedford Inst.

PRINCIPAL COOPERATING AGENCIES

DATE:

FROM

1962

TO

Continuing

EFFORT (IN MAN YEARS)

PROFESSIONAL

1 1/2

SUPPORT SERVICES

4

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

The principal purpose of this study is to determine the stress exerted by the wind on the sea surface by measuring and analyzing three components of wind turbulence. A secondary purpose is to study the characteristics of the wind turbulence by spectral analysis of the same data.

It is intended to determine wind stress over a range of wind speeds up to 40 mph (20 mph).

Measurements are made from a stable platform located in the open sea 2 to 5 miles offshore of Halifax Harbour, using a telemetering Döe thrust anemometer. The addition of temperature and measurements is planned in order to determine thermal and sea-state effects on the wind stress and turbulence.

→ SCIENTIST IN CHARGE: S.D. Smith

THIS SPACE FOR CCO INDEXING



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME		
Wind Stress on Sea Ice, Air-Sea Interaction		
LOCATION(S)		
Gulf of St. Lawrence		
AGENCY		
DEM&R, MSB, Atlantic Oceanographic Laboratory, Bedford Inst.		
PRINCIPAL COOPERATING AGENCIES		
Marine Sciences Centre McGill University		
DATE:	FROM	TO
	1969	Continuing
EFFORT (IN MAN YEARS)		
PROFESSIONAL		1
SUPPORT SERVICES		14
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)		
<p>In this study, wind stress on the surface of the ice is determined by measuring and analysing three components of wind turbulence. Bedford Institute's sonic anemometer and recording equipment were operated at a manned drifting station established by the Marine Sciences Centre of McGill University in February, 1969.</p> <p>This year's experiment contributed to McGill's study of ice drift in the Gulf of St. Lawrence by giving a few values of the drag coefficient of one type of ice surface. In February and March, 1970, a similar joint expedition is planned and measurements over several types of ice will be attempted.</p>		
SCIENTIST IN CHARGE: P.D. Smith		
THIS SPACE FOR CCO INDEXING		



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1970

PROJECT NAME Electric and Magnetic Variations on Land & Sea

LOCATION(S) From the east coast of Canada to the Mid-Atlantic Ridge in the Atlantic Ocean between 35°N and 60°N lat.

AGENCY DEM&R, MSB, Atlantic Oceanographic Laboratory, B.I.

PRINCIPAL COOPERATING AGENCIES

Marine Geophysics Group
Cambridge University, Cambridge, England
Scripps Institution of Oceanography, La Jolla, Calif., U.S.A.
Imperial College of Science & Technology, London, England.

DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1966	Indefinite	PROFESSIONAL ... 1. SUPPORT SERVICES ... 3.

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S).
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Simultaneous recordings of magnetic and electric variations at several locations on land near the coast as well as in shallow and deep sea are made to study the effect of the coast on these variations and to determine the electrical conductivity distribution beneath each station. Standard equipment, (variographs or three component proton precession magnetometers for magnetic variations and potentiometric recorders with suitable electrodes for earth current variations) is used at land-based stations. A single component variograph enclosed in a watertight container together with a small recorder and its power supply is used to measure the magnetic variations at the bottom of the ocean. The electric field is measured using Ag-AgCl electrodes spaced about 1 km apart on the bottom of the ocean and a self-contained recorder housed in a watertight container. The direction of the electric field is determined from the photographic recordings of the magnetic compasses mounted on the cables attached to the electrodes. After the magnetometers are lowered and electric cables layed out in perpendicular directions, they are left attached to surface buoys for a month or two. Weather conditions in the North Atlantic restrict recording to the summer months.

SCIENTIST IN CHARGE: S.P. Srivastava

THIS SPACE FOR CCO INDEXING



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME

Scotian Shelf Moored Buoy

LOCATION(S)

Scotian Shelf

AGENCY

DEM&R, MSB, Atlantic Oceanographic Laboratory, B.I.

PRINCIPAL COOPERATING AGENCIES

Fisheries Research Board

DATE:

FROM

1967

TO

Indefinite

EFFORT (IN MAN YEARS)

PROFESSIONAL

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SUPPORT SERVICES

4

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SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

To collect and study time-series data (currents and temperature) from moored buoys on the Scotian Shelf, and observe spatial distribution of temperature and salinity.

Moored buoy stations are maintained on the Scotian Shelf and Slope. The data is processed by computer, velocity and temperature spectra, as well as residual currents, are being obtained.

1967 and 1968 data have been processed and analysed. The data show topographic influxes on internal tides on the shelf.

J. Warner
C.R. Mann
A.W. Trites

→ SCIENTIST IN CHARGE: _____

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST 1969-1972

PROJECT NAME			
Bay of Fundy Tidal Power Study			
LOCATION(S)			
Bay of Fundy - Nova Scotia and New Brunswick			
AGENCY			
Atlantic Tidal Power Programming Board			
PRINCIPAL COOPERATING AGENCIES			
Department of Energy, Mines & Recourses, Inland Waters Branch, Nova Scotia Power Commission. New Brunswick Electric Power Commission. Other Agencies of the Federal Government. Private Consulting Firms.			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1968	1969	PROFESSIONAL . . . 6 SUPPORT SERVICES
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S)) (MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>A preliminary engineering study is being conducted of the physical and economic potential of the development of power from the tides in the Bay of Fundy. This study includes, among other matters:</p> <ul style="list-style-type: none"> Studies of the tidal regime of the Bay of Fundy, effect of barrage construction on tides. Preliminary studies of ice formation patterns, duration of ice cover, properties of ice in the Bay of Fundy. Geophysical surveys of sea bed constituents in the Annapolis - St. Mary, Chignecto Bay and Minas Basin areas of the Bay of Fundy. Work conducted by consulting firm. Preliminary studies of sediment regime of the Bay of Fundy and possible effects of barrages on sediment motion. Wind generated waves in the Bay of Fundy. Marine life and effect of barrages on it. Temperatures of water and effect of barrages in its distribution and magnitude. 			
Engineer → SCIENTIST IN CHARGE: J. J. Lawler			
THIS SPACE FOR CCO INDEXING			

PROJECT FORECAST

1969 - 1970

PROJECT NAME			Beach Studies in Barbados		
LOCATION(S)			Barbados, W.I.		
AGENCY			Bellairs Research Institute of McGill University and Department of Geography, McGill University		
PRINCIPAL COOPERATING AGENCIES			Government of Barbados		
DATE:	FROM	TO	EFFORT (IN MAN YEARS)		
	1967	1970	PROFESSIONAL	...	2.....
			SUPPORT SERVICES	...	2.....
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)					
<p>1. The origin, frequency and direction of swell waves. A study for part of a year has already been made for Barbados and an extension of this study by direct observation and analysis of synoptic charts is indicated. Wave records must be obtained which, when supplemented by existing data, will provide an understanding of the refraction effects of the island.</p> <p>2. Bathymetry. The local changes by refraction of waves as they approach a beach and the manner in which the energy is transmitted to the beach by the breaking wave, are principally a function of the inshore bathymetry. The complexity of the nearshore bathymetry makes precise refraction forecasting difficult and it is essential for this purpose and for the analysis of the submarine transportation of sand to make a detailed bottom survey from 200 metres depth to the shore on a scale large enough to include the most important topographical irregularities resulting from coral growth.</p> <p>3. A detailed analysis of changes in morphology and composition of selected beaches throughout the annual cycle. Data to be collected will include beach profiles and planimetry; particle size and composition of beach material, origin and transportation of beach material (parallel and perpendicular) using fluorescent tracers.</p>					
<p>→ SCIENTIST IN CHARGE: Prof. B. Bird</p>					
THIS SPACE FOR CCO INDEXING					



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1970

PROJECT NAME Feeding and Energetics in the Tropical Sea Urchin <i>Tripneustes esculentus</i>		
LOCATION(S) Barbados, W.I.		
AGENCY Bellairs Research Institute of McGill University		
PRINCIPAL COOPERATING AGENCIES National Research Council		
DATE:	FROM 1968	TO 1970
EFFORT (IN MAN YEARS)		
PROFESSIONAL		1
SUPPORT SERVICES		1
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.) Study of ability of sea urchin <i>Tripneustes</i> to utilize various types of algae available. An energy budget including food absorption, assimilation, growth efficiency is being constructed.		
SCIENTIST IN CHARGE: Dr. T. Harrison		
SPACE FOR CCO INDEXING		

PROJECT FORECAST 1969-1970

PROJECT NAME Ecology of Thalassia Beds			
LOCATION(S) Barbados, W.I.			
AGENCY Bellairs Research Institute of McGill University			
PRINCIPAL COOPERATING AGENCIES National Research Council McConnell Memorial Fellowship			
DATE:	FROM 1967	TO 1969	EFFORT (IN MAN YEARS) <div style="display: flex; justify-content: space-between;"> PROFESSIONAL ... 1 ... </div> <div style="display: flex; justify-content: space-between;"> SUPPORT SERVICES ... 1 ... </div>
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p><u>The Ecology of Thalassia Testudinum and Algal Communities in Thalassia Beds</u></p> <p>The purpose of this project involves two major goals:</p> <ol style="list-style-type: none"> 1) to determine the factors influencing the distribution and development of <u>Thalassia</u> beds in the infralittoral zone and 2) to study quantitatively both the composition of algal communities in <u>Thalassia</u> beds and the importance of these algal species in sedimentation build-up in <u>Thalassia</u> beds. <p>In general this study has not only revealed the composition of algal communities, but shows the effect which environmental conditions and physical features of the platforms have on the distribution of the communities and their individual species. A comparative study is planned on the rocky shores of the east coast, where the wave amplitude is from four to eight times as great as on the west coast.</p> <div style="text-align: right; margin-top: 20px;"> M. Goldstein D. Patricuin </div> <div style="text-align: center; margin-top: 10px;"> → SCIENTIST IN CHARGE: ----- </div>			
THIS SPACE FOR CCO INDEXING			

1969- 1970

[illegible]



PROJECT NAME
Pollution and tropical marine organisms

LOCATION(S)
Barbados, West Indies

AGENCY
Bellairs Research Institute of McGill University

PRINCIPAL COOPERATING AGENCIES
National Research Council

DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1969	1970	PROFESSIONAL 1
			SUPPORT SERVICES 1

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Testing the effects of oil pollution and oil dispersal chemicals on shallow water reef corals as typical tropical forms. Laboratory and field test methods will both be used.

→ SCIENTIST IN CHARGE: Professor J.D. Lewis

THIS SPACE FOR CCO INDEXING



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1977

PROJECT NAME				Primary Production in Tropical Waters			
LOCATION(S)				Barbados, W.I.			
AGENCY				Bellairs Research Institute of McGill University			
PRINCIPAL COOPERATING AGENCIES				Marine Sciences Centre Bermuda Biological Station Office of Naval Research National Research Council			
DATE:		FROM	TO	EFFORT (IN MAN YEARS)			
		1967	1970	PROFESSIONAL		1	
				SUPPORT SERVICES		1	
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)							
<p>Estimates of seasonal production of phytoplankton, related to nutrient levels, depth, distance from shore. Nutrient exchange between sediment water surface interface. Different locations near and on coral reefs, sandy bottoms, sources of land water run off.</p>							
→ SCIENTIST IN CHARGE: <u>Professor D.M. Steven.</u>							
THIS SPACE FOR CCO INDEXING							



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1970

PROJECT NAME

Zooplankton Production in Tropical Waters

LOCATION(S)

Barbados, West Indies

AGENCY

Bellairs Research Institute of McGill University

PRINCIPAL COOPERATING AGENCIES

Marine Sciences Centre
Bermuda Biological Station
Office of Naval Research
National Research Council
University of the West Indies

DATE:

FROM

1967

TO

1970

EFFORT (IN MAN YEARS)

PROFESSIONAL

.....2.....

SUPPORT SERVICES

.....1.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Studies of production of zooplankton in terms of life histories, seasonal abundance and biomass in relation to levels and cycles of primary production. Weekly zooplankton samples at surface to 400 metres.

→ SCIENTIST IN CHARGE: Professor D.M. Steven

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST 1969-1970

PROJECT NAME Turbulent ocean currents in the wake of Barbados.		
LOCATION(S) Bellairs Research Institute, St. James, Barbados		
AGENCY Bellairs Research Institute of McGill University		
PRINCIPAL COOPERATING AGENCIES		
DATE: <div style="text-align: center;">1967</div>	FROM <div style="text-align: center;">1969</div>	TO <div style="text-align: center;">1969</div>
EFFORT (IN MAN YEARS)		
<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> PROFESSIONAL SUPPORT SERVICES </div> <div style="width: 35%; text-align: right;"> </div> </div>		
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)		
<p>Turbulent flow of the ocean currents flowing past Barbados are being studied by the following techniques:-</p> <ol style="list-style-type: none"> 1. Placement of recording current meters on the lee side of the island. 2. Transects with a geomagnetic electrokinetograph). 3. Examination of eddie systems from satellite photographs. 		
<div style="text-align: right;"> → SCIENTIST IN CHARGE: Dr. J. J. O'Brien </div>		
THIS SPACE FOR CCO INDEXING		



CANADA

CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969-1970

PROJECT NAME			
Acoustic Properties of Deep Scattering Layers			
LOCATION(S)			
North Atlantic: Norwegian Sea to Puerto Rico Halifax to Gibraltar			
AGENCY			
DND, DRB, Defence Research Establishment Atlantic			
PRINCIPAL COOPERATING AGENCIES			
FRB, MEL (Bedford Institute)			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1962	1971	PROFESSIONAL .....3..... SUPPORT SERVICES .....3.....
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>The acoustical properties of deep scattering layers are measured as a function of frequency, geographic location, depth, season and time of day. Explosives fired near the sea surface are used as sound sources and omnidirectional hydrophones (0-30 kHz) and 5 kHz, 12 kHz and broadband 1.6 to 25 kHz downward looking arrays are used as receivers. The received signals are converted to scattering strength from which a number of quantities of interest to marine biologists can be obtained; size, density, geographic distribution and the diurnal migration behaviour of the scatterers. The dominant scatterers are resonant at a frequency which depends on the depth and size of their gas bladders.</p> <p>One report has been completed on a technique for analysing reverberation data collected with directional receivers. Two reports on the scattering strengths of deep scattering layers in the North Atlantic and in the Norwegian Sea are in progress.</p> <p>In April, an experiment was carried out between Halifax and the Azores, and an extensive series of measurements were made near the Island of Santa Maria.</p> <p>An experiment is now underway on "CNAV QUEST" to examine deep scattering layers in the North Pacific and Caribbean. DREA staff are also participating in HUDSON-70 and will be carrying out reverberation measurements in the South Atlantic, and the South and North Pacific.</p>			
SCIENTIST IN CHARGE: Dr. R. P. Chapman			

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST 1969-1977

PROJECT NAME			
Velocity of Sound in the Ocean			
LOCATION(S)			
North Atlantic: Halifax to Bermuda			
AGENCY			
DND, DRB, Defence Research Establishment Atlantic			
PRINCIPAL COOPERATING AGENCIES			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1968	1971	<div style="display: flex; justify-content: space-between;"> <div>PROFESSIONAL</div> <div>.....¹</div> </div> <div style="display: flex; justify-content: space-between;"> <div>SUPPORT SERVICES</div> <div>.....²</div> </div>
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>The velocity of sound in the ocean is being studied with particular emphasis on its variability over short distances and during time intervals from seconds to hours. Comparisons are being made between <u>in situ</u> measured values of sound velocity and values computed from hydrographic data using Wilson's equations.</p> <p>In 1968 construction started on a second sound velocity measuring system. A DDP 416 computer and an incremental digital tape recorder are incorporated into the system to increase the data sampling rate and the number of sensors that can be used, and to provide a reprogramming capability to meet a variety of measuring requirements. Initially depth will be measured with a pressure transducer but later computer processing of the signal from an inverted echo sounder will be used to improve the accuracy of depth measurements.</p> <p>A study of data taken with the system has evaluated its potential for microstructure and turbulence studies and has provided design criteria for future experiments. An improved calibration facility is planned and experiments to study motional effects on instrumentation accuracy will be made.</p>			
SCIENTIST IN CHARGE			S. F. PIERCE
THIS SPACE FOR CCG INDEXING			

CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969 - 1970

PROJECT NAME

Biological Studies on HUDSON 70

LOCATION(S)

North and South Atlantic and South Pacific

AGENCY

FRB, Marine Ecology Laboratory, BI, Dartmouth

PRINCIPAL COOPERATING AGENCIES

Dalhousie University, Royal Ontario Museum, University of Toronto, Guelph University.

DATE:

FROM

Nov. 1969

TO

June 1970

EFFORT (IN MAN YEARS)

PROFESSIONAL

3

.....

SUPPORT SERVICES

3

.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Biological Studies for HUDSON 70 are planned to take advantage of the unique opportunity to sample a continuous north-south transect in both Atlantic and Pacific Oceans extending from equatorial waters to the Antarctic. Included will be a comparison of primary production estimates using the carbon 14 and the Coulter Counter techniques, studies of the uptake and release of carbon by phytoplankton and an investigation of the relative importance of living and non-living particulate organic matter with ATP.

The vertical and horizontal distribution of zooplankton in relation to different water masses, especially the Antarctic intermediate water, will be undertaken. The abundance and species composition of macroplankton, which may be contributing to sound scattering in the subsurface layers, will be investigated by means of Isaac-Kidd trawls. The relation between zooplankton abundance and 200 kHz sound scattering will also be studied. An intensive study of zooplankton and the factors accounting for its distribution is planned for the Drake Passage Area. Physiological and behavioural studies of certain planktonic animals are planned.

The abundance and diversity of deep-sea benthos in the Drake Passage and distribution of littoral and sublittoral animals in the Straits of Magdallen will also be investigated.

Scientific Coordinator

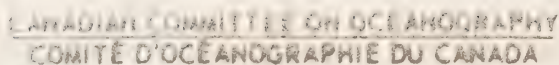
R.J. Conover

→ ~~SECRETARY IN CHARGE~~

THIS SPACE FOR CCO INDEXING

1968-1970

PROJECT NAME Zooplankton distribution in a coastal embayment and its relation to offshore populations.											
LOCATION(S) St. Margaret's Bay and adjacent Scotian Shelf.											
AGENCY FRB, Marine Ecology Laboratory, BI, Dartmouth											
PRINCIPAL COOPERATING AGENCIES											
DATE:	FROM 1968	TO indefinite	EFFORT (IN MAN YEARS) <table style="width: 100%; border: none;"> <tr> <td style="text-align: right; padding-right: 10px;">PROFESSIONAL</td> <td style="text-align: right;">1/2</td> </tr> <tr> <td style="text-align: right; padding-right: 10px;">.....</td> <td style="text-align: right;">.....</td> </tr> <tr> <td style="text-align: right; padding-right: 10px;">SUPPORT SERVICES</td> <td style="text-align: right;">1</td> </tr> <tr> <td style="text-align: right; padding-right: 10px;">.....</td> <td style="text-align: right;">.....</td> </tr> </table>	PROFESSIONAL	1/2	SUPPORT SERVICES	1
PROFESSIONAL	1/2										
.....										
SUPPORT SERVICES	1										
.....										
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.) <p> The zooplankton populations of an open coastal embayment such as St. Margaret's Bay have a relatively short residence time. At several times during the year, rather sudden and major changes in species composition occur, but presumably there is also a constant flux of organisms between the Bay and proximate coastal waters. Certain species, particularly pteropods belonging to the genus <u>Spiratella</u>, have important indicator value because they are conspicuous in the tows and have relatively long life cycles so that growth of individual generations can be followed. It may be possible to use the rate of change in numbers of <u>Spiratella</u> at certain seasons to determine rates for the Bay once appropriate corrections for immigration and natural mortality can be made. In order to estimate mortality, shells of <u>Spiratella</u> are being collected at two sites of the Bay area in specially constructed sediment traps. </p> <p> The problem of immigration is complicated by the fact that two species of <u>Spiratella</u>, presumably with different origins to the east are found in the Bay. One population, <u>S. retroversa</u>, is widespread on the coastal shelf and may be associated with water flowing out of the Gulf of St. Lawrence. The other <u>S. helicina</u> is more northern in distribution and is most frequently encountered off the east coast of Newfoundland. Presumably these two "streams" of plankton mix on the shelf and in the Gulf outflow between Newfoundland and Nova Scotia. To investigate this phenomenon a series of cruises involving physical oceanographic transects and plankton collections are planned on the Scotian Shelf, in Cabot Strait and along the south coast of Newfoundland. </p>											
—————> SCIENTIST IN CHARGE			R.J. Conover								
THIS SPACE FOR CCO INDEXING											



1969 - 1970

PROJECT NAME Production Processes in Fishes							
LOCATION(S) St. Margaret's Bay, Scotian Shelf, Gulf of St. Lawrence and Laboratory phases.							
AGENCY FRB, Marine Ecology Laboratory, B.I., Dartmouth (21)							
PRINCIPAL COOPERATING AGENCIES Institute of Oceanography, Dalhousie University							
DATE:	FROM 1968	TO indeterminate	EFFORT (IN MAN YEARS) <table style="width: 100%; border: none;"> <tr> <td style="text-align: right;">PROFESSIONAL</td> <td style="text-align: right;">... 4 ...</td> </tr> <tr> <td style="text-align: right;">SUPPORT SERVICES</td> <td style="text-align: right;">... 2 ...</td> </tr> </table>	PROFESSIONAL	... 4 ...	SUPPORT SERVICES	... 2 ...
PROFESSIONAL	... 4 ...						
SUPPORT SERVICES	... 2 ...						
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.) <div style="padding: 10px;"> <p>Production models being developed with respect to fish populations suggest that there are complex but predictable relationships between the population-dynamics parameters which have heretofore been treated as more or less constant and independent. Of particular importance appears to be the relationship between physiological state, behaviour and feeding. Studies begun to date include investigation of potential indicators of metabolic level in natural surroundings, the feed-back relations between food type and supply, metabolism and growth, the partitioning of production processes into somatic tissue and germ cells, and the relation of metabolism to mortality rate. Special studies of larval distribution and survival are being undertaken.</p> </div>							
→ SCIENTIST IN CHARGE: L.M. Dickie							
THIS SPACE FOR CCO INDEXING							



PROJECT FORECAST
1969 - 1970

PROJECT NAME			Mathematical model of Fisheries predator-prey relations		
LOCATION(S)			Scotian Shelf		
AGENCY			FRB, Marine Ecology Laboratory, BI, Dartmouth (21)		
PRINCIPAL COOPERATING AGENCIES			Department of Mathematics, University of Toronto		
DATE:	FROM	TO	EFFORT (IN MAN YEARS)		
	1966	indeterminate	PROFESSIONAL	2	
			SUPPORT SERVICES	1	
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)					
<p>Our newly developed stochastic models of predator-prey relations permit examination of the effect on catch of many of the factors occurring in general predator-prey situations or in fishing operations. Commonly the catch to the predator depends on both its own behaviour pattern and on the distribution of prey. Depending on the interaction between the two, schooling of prey can either increase or decrease the predator's catch or be advantageous or disadvantageous to the survival of prey. In the case of fisheries, schooling is generally advantageous to the fishermen. However practical application of the theory requires better measures of fish distributions than are currently available, as well as a measure of the usefulness of various kinds of information to the skipper in making fishing decisions. Records of fish distributions are being obtained from specially built echo-sounder-recorders and analyzed for information on the scales and patterns of occurrence. Operations research on fleet activities and on factors affecting the economic success of fishing operations have been initiated as part of the whole predator-prey systems analysis.</p>					
			SCIENTIST IN CHARGE: L.M. Dickie		
THIS SPACE FOR CCO INDEXING					



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969 - 1970

PROJECT NAME

Sediment - biology relations

LOCATION(S)

Gulf of St. Lawrence

Laboratory

AGENCY

Marine Ecology Laboratory
Fisheries Research Board of Canada, Bedford Institute, Dartmouth

PRINCIPAL COOPERATING AGENCIES

Atlantic Oceanographic Laboratory

DATE:

FROM

1962

TO

continuing

EFFORT (IN MAN YEARS)

PROFESSIONAL

1

.....

SUPPORT SERVICES

1

.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

This project consists of a continuing series of investigations to determine (1) the regional depositional processes, (2) the response of material in suspension and at the sediment-water interface to the physico-chemical conditions in the marine environment and (3) the relationship between sediment types and the distribution of bottom and near bottom dwellers such as oysters and crabs.

Sounding and sampling data are collected at sea and processed in the laboratory using conventional sedimentological, mineralogical and chemical techniques.

The results of these investigations are published as the different phases of them are completed.

→ SCIENTIST IN CHARGE. D.D. Loring

THIS SPACE FOR CCO INDEXING

PROJECT NAME

Productivity in a small ecosystem

LOCATION(S)

St. Margaret's Bay and environs (Scotian Shelf)

AGENCY

FRB, Marine Ecology Laboratory, B.I., Dartmouth (21)

PRINCIPAL COOPERATING AGENCIES

DEMR in B.I.

DATE:

FROM

1966

TO

indeterminate

EFFORT (IN MAN YEARS)

PROFESSIONAL

..... 3

SUPPORT SERVICES

..... 3

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

The nature of the dependence of marine production at higher trophic levels on the primary and secondary productivity has never been clearly demonstrated, perhaps partly because of the flexibility and complexity of the trophic systems and partly because of the sampling problems associated with identifying and measuring abundance and turnover of effectively interacting units.

Measurements of productivity in the phytoplankton, seaweeds, zooplankton, benthos and fish populations in relation to water masses are being undertaken in a semi-enclosed basin, St. Margaret's Bay, which contains a rich fauna and flora representative of coastal regions of the Scotian Shelf. Preliminary calculations of ecotrophic coefficients have been made, and problems of sampling for various production parameters underlying them are being studied. Three small boats are involved in the sampling program.

SCIENTIST IN CHARGE: _____

THIS SPACE FOR CCO INDEXING



CANADA

CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1970

PROJECT NAME			COASTAL FERTILITY - Fertilizing influence of pollution		
LOCATION(S)					
Halifax Harbour, Bedford Basin and inshore waters of Nova Scotia					
AGENCY					
Marine Ecology Laboratory, Bedford Institute, Dartmouth					
PRINCIPAL COOPERATING AGENCIES					
DATE:		FROM	TO	EFFORT (IN MAN YEARS)	
		1969	continuing	PROFESSIONAL	1
				SUPPORT SERVICES	

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S))
(MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Small amounts of organic nutrients which are often undetectable by conventional chemical analytical techniques have been shown to effect the fertility of sea water for phytoplankton production. The input of such biologically active substances in inshore coastal waters through domestic and industrial pollution results in significant changes in growth quality of water in favour of one or the other species of phytoplankton. An assessment of changes in the production and succession of phytoplankton in originally polluted and non-polluted environments should permit not only recognition of indicator species but should also provide a basis of development of biological assays of polluted water.

→ SCIENTIST IN CHARGE: A. Prakash

THIS SPACE FOR CCO INDEXING



PROJECT NAME		
Influence of humic substances on marine phytoplankton production		
LOCATION(S)		
Laboratory Bay of Fundy, inshore waters of Nova Scotia		
AGENCY		
FRB, Marine Ecology Laboratory, B.I., Dartmouth		
PRINCIPAL COOPERATING AGENCIES		
DEMR (Marine Geology - Organic Geochemistry)		
DATE:	FROM	TO
	1967	continuing
		EFFORT (IN MAN YEARS)
		PROFESSIONAL 1
		SUPPORT SERVICES 1/2
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)		
<p>Small concentrations of humic and fulvic acids exert a stimulatory effect on marine phytoplankton which is reflected in increased growth rate and higher yield. The growth promoting activity of humic substances lies mostly with the low molecular weight, water soluble fractions which act as biological stimulants for marine algae and are associated with the cellular metabolic processes in addition to their assigned role as chelators. Studies are continuing to examine the physiological pathways and main functional groups of humic substances which lead to growth enhancement of planktonic algae.</p>		
A. Prakash		
M.A. Rashid		
→ SCIENTIST IN CHARGE: -----		
THIS SPACE FOR CCO INDEXING		

PROJECT FORECAST 1969 - 1970

[illegible]



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1 9 7 0

PROJECT NAME

Productivity

LOCATION(S)

Atlantic, Pacific and Southern Oceans

AGENCY

FRB, Marine Ecology Laboratory, B.I., Dartmouth

PRINCIPAL COOPERATING AGENCIES

DATE:

FROM

1968

TO

Indeterminate

EFFORT (IN MAN YEARS)

PROFESSIONAL

...1.....

SUPPORT SERVICES

... $\frac{1}{2}$

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Investigation of standing stock and production of
particulate material in nearshore and oceanic
environments.

→ SCIENTIST IN CHARGE: R. W. Sheldon

THIS SPACE FOR CCD INDEXING



PROJECT NAME

Estuarine Oceanography

LOCATION(S)

Locations in the Maritime Provinces
Ellerslie, P.E.I.; Shippegan and Neguac, N.B.; Malagash and
Orangedale, N.S.

AGENCY

FRB, Oyster Unit (Ellerslie, P.E.I.)

PRINCIPAL COOPERATING AGENCIES

Federal Department of Fisheries, Resource Development Branch

DATE:

FROM

1930

TO

Continuing

EFFORT (IN MAN YEARS)

PROFESSIONAL

1/4

.....

SUPPORT SERVICES

1/2

.....

SUMMARY

(PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

These studies provide physical data as a background to continuing biological studies.

At Ellerslie water temperatures and salinities are monitored daily from one station and at regular intervals from the principal study area, with occasional observations throughout Malpeque Bay. Similar regular observations are made in the other locations. Also, at Ellerslie, deposition of silt is monitored.

Temperature observations are made by thermistor thermometer and salinity estimations from specific gravity measurements of water samples or, in situ, by induction salinometer. Readings and samples are taken from a wharf or small boat.

Observations are made throughout the year. Ice thickness is monitored when appropriate.

Currents are being investigated in Malpeque Bay P.E.I. using drift bottles and bottom drifters.

→ SCIENTIST IN CHARGE: M.L.H. Thomas

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST
1969-197

PROJECT NAME		Biology and ecology of large pelagic fish	
LOCATION(S)		Offshore areas of the Canadian Atlantic. May also extend to the Caribbean if vessels available.	
AGENCY		FRB, Biological Station, St. Andrews, N.B.	
PRINCIPAL COOPERATING AGENCIES		None planned for 1970	
DATE:	FROM 1958	TO indefinite	EFFORT (IN MAN YEARS) <div style="display: flex; justify-content: space-between;"> <div> PROFESSIONAL SUPPORT SERVICES </div> <div style="text-align: right;"> 1 3 </div> </div>
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>To delineate the distribution of large pelagic fish (swordfish, tuna and sharks) in the Canadian region of the Northwest Atlantic to obtain information on abundance and availability to commercial fisheries; to describe size, age, growth and other biological parameters that are required to form a basis for intelligent management of these resources. Particular attention will be paid to tagging experiments. Field collections will involve FRB vessels, charter vessels and Bedford Institute (DEM&R) vessels if available - seasonal cruises will be made when equipment is available.</p>			
		Mr. J.S. Beckett —————→ SCIENTIST IN CHARGE:	
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1970

PROJECT NAME		Scallop Studies	
LOCATION(S)		Gulf of St. Lawrence, Georges Bank, Bay of Fundy, Passamaquoddy Bay	
AGENCY		FRB, Biological Station, St. Andrews, N. B.	
PRINCIPAL COOPERATING AGENCIES			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1966	indefinite	<div style="display: flex; justify-content: space-between;"> PROFESSIONAL ...1..... </div> <div style="display: flex; justify-content: space-between;"> SUPPORT SERVICES 2. +. casual </div>
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>A study of the population dynamics of scallops with emphasis on the behaviour (byssus attachment, swimming response) in relation to commercial gear efficiency. Laboratory observations are combined with field experiments involving considerable use of scuba techniques and underwater photography. Assessment of population densities and hydrographic parameters carried out from FRB research vessels, using scallop dredges and camera sleds, or directly, using submersibles and Scuba techniques. Particular emphasis is placed on the assessment of submersible vehicles for fisheries survey work.</p>			
<div style="text-align: right; margin-right: 100px;">Dr. J. F. Caddy</div> <div style="text-align: center;">SCIENTIST IN CHARGE</div>			
THIS SPACE FOR CCO INDEXING			



PROJECT NAME			
Bay of Fundy Herring Assessment			
LOCATION(S)			
Bay of Fundy — Southwestern Nova Scotia			
AGENCY			
FRB, Biological Station, St. Andrews, N. B.			
PRINCIPAL COOPERATING AGENCIES			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
January 1969		December 31, 1969	PROFESSIONAL ..1..... SUPPORT SERVICES ..2.(approx.)
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
Assessment of status of Bay of Fundy herring stocks in relation to the recent increase in exploitation level.			
Recommendations for a future program of research to yield information on which rational exploitation can be based.			
Analysis of past records, setting up of more intensive sampling for catch/effort and biological statistics.			
Study of recruitment relationships on which diagnosis can be based.			
Study of interrelationships of herring stocks in the area by meristic and other means.			
Data collected throughout year but mainly from May to October.			
Facilities of St. Andrews Biological Station available, including computer, ships, and technical staff.			
			T. D. Iles (T. D. Iles)
			SCIENTIST IN CHARGE: -----
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1972

PROJECT NAME			Groundfish Surveys and Recruitment		
LOCATION(S)			Gulf of St. Lawrence & Cape Breton area		
AGENCY			FRB, Biological Station, St. Andrews, N. B.		
PRINCIPAL COOPERATING AGENCIES					
DATE:		FROM	TO	EFFORT (IN MAN YEARS)	
		1957	continuing	PROFESSIONAL	.3/4.....
				SUPPORT SERVICES	.3.....
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)					
<p>A study of population dynamics of Gulf of St. Lawrence groundfish. Research-vessel surveys are carried out to sample the population and associated environmental parameters. Surveys will continue in the area in 1970.</p> <p>Included is study of mechanisms of recruitment to Gulf of St. Lawrence groundfish stocks. Collections of eggs, larvae and post-larval fish are made to determine distribution, growth, and mortalities. Associated environmental observations are made. Program will be continued during May-October 1970.</p>					
_____ → SCIENTIST IN CHARGE:				Dr. A. C. Kohler	
THIS SPACE FOR CCO INDEXING					

CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1970

PROJECT NAME Marine climate - Biomass in Bay of Fundy

LOCATION(S)

Entrance Bay of Fundy

AGENCY

FRB, Biological Station, St. Andrews, N.B.

PRINCIPAL COOPERATING AGENCIES

DATE:

FROM

TO

EFFORT (IN MAN YEARS)

1924

indefinite

PROFESSIONAL

1/10.....

SUPPORT SERVICES

1/5.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Time series studies of the physical properties and the related biological content of the waters at the entrance of Bay of Fundy are conducted to follow long-term variations in the physical oceanography and the effects on the distribution and abundance of the young of commercial species and their food. Monthly observations are carried out at serial depths. This is a continuing project commenced in 1924.

Dr. L.M. Lauzier.

→ SCIENTIST IN CHARGE: -----

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CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1970



PROJECT NAME

Drifter program

LOCATION(S)

Continental Shelf from Bay of Fundy to Labrador including Gulf of St. Lawrence

AGENCY

FRB, Biological Station, St. Andrews, N.B.

PRINCIPAL COOPERATING AGENCIES

CNR FRB, St. John's
CPR FRB, Dartmouth

DATE:

FROM

1960

TO

indefinite

EFFORT (IN MAN YEARS)

PROFESSIONAL

1/3.....

SUPPORT SERVICES

1 1/2....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Coastal circulation studies based on releases and recoveries of drift bottles and sea-bed drifters at fixed stations in Bay of Fundy, Gulf of Maine, and Cabot Strait. These daily releases are supplemented by others made at less frequent intervals from research vessels over the Continental Shelf. This project started in 1960 has expanded from approximately 7,200 releases in 1960 to a total of 20,100 in 1967.

Several papers are published. These studies permit detection of seasonal and year-to-year variations in the circulation. Such variations, as well as short-term changes, are related to meteorological conditions and to properties of water masses.

Dr. L. M. Lauzier

→ SCIENTIST IN CHARGE: -----

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST
1969-1977

PROJECT NAME			
Environmental Surveys			
LOCATION(S)			
Bay of Fundy — Gulf of Maine — Western Scotian Shelf			
AGENCY			
FRB, Biological Station, St. Andrews, N.B.			
PRINCIPAL COOPERATING AGENCIES			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1967	continuing	<div style="display: flex; justify-content: space-between;"> <div> PROFESSIONAL SUPPORT SERVICES </div> <div style="text-align: right;"> 2/3 1-1/2 </div> </div>
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>Physical oceanographic studies are related to the distribution of fish eggs and larvae (mostly herring) over a segment of the continental shelf. Temperature and salinity observations are made at standard depths along a network of stations to determine the distribution of water masses and their seasonal variations. Various types of plankton tows at the same stations provide the necessary data on the biological content of water masses. The surface and bottom non-tidal drifts are studied from releases and recoveries of drift bottles and sea-bed drifters. From 4 seasonal surveys in each of the last 3 years, we plan to make 4 surveys in 1970. No result published as yet.</p>			
Dr. L. M. Lauzier Mr. S. N. Tibbo			
<div style="display: flex; justify-content: flex-end;"> <div style="text-align: right;">SCIENTIST IN CHARGE:</div> <div style="border-top: 1px dashed black; width: 100%;"></div> </div>			
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1970

PROJECT NAME

Herring population studies

LOCATION(S)

Gulf of St. Lawrence

AGENCY

FRB, Biological Station, St. Andrews, N. B.

PRINCIPAL COOPERATING AGENCIES

None planned for 1970.

DATE:

FROM

1968

TO

indefinite

EFFORT (IN MAN YEARS)

PROFESSIONAL

1

SUPPORT SERVICES

1

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

To delimit herring populations in Gulf of St. Lawrence by studying the unit stocks, movement, growth and recruitment, and to study the relation, if any, between spring- and fall-spawning fish. Commercial catches will be sampled at the landing ports and a survey of the fishery grounds using an FRB vessel is planned for 1970.

→ SCIENTIST IN CHARGE: Mr. S. N. Messieh

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CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1970

PROJECT NAME

Surveys of underexploited fish species

LOCATION(S)

Nova Scotia Banks and adjacent waters

AGENCY

FRB, Biological Station, St. Andrews, N.B.

PRINCIPAL COOPERATING AGENCIES

DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1967	indefinite	PROFESSIONAL .....1... SUPPORT SERVICES1...

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

General investigations into the occurrence and general biology of certain species of fish of potential economic importance in order to determine the factors which govern their distribution. Population studies based on meristics and parasites are included. Fish are caught by trawl from research or chartered vessels at various locations and seasons and catches correlated with oceanographic data.

→ SCIENTIST IN CHARGE: Dr. J.C. Scott

THIS SPACE FOR CCO INDEXING



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1970

PROJECT NAME

Fish species associations

LOCATION(S)

Passamaquoddy Bay, New Brunswick
Nova Scotian Shelf

AGENCY

FRB, Biological Station, St. Andrews, N.B.

PRINCIPAL COOPERATING AGENCIES

DATE:

FROM

TO

EFFORT (IN MAN YEARS)

1964

continuing

PROFESSIONAL

.....1.....

SUPPORT SERVICES

.....1.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S).
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

A study of competition and predation among marine fishes including: (1) food resource division; (2) evaluation of energy content of natural food items; (3) rates of food ingestion. A year's work will include data analysis of item (1), research-vessel time and laboratory calorimetry for item (2), laboratory studies and diving operations for item (3).

A. V. Tyler

—————> SCIENTIST IN CHARGE: —————

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST
1969-1970

[illegible]



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1970

PROJECT NAME				Biology of grey and harbour seals			
LOCATION(S)				Gulf of St. Lawrence and Maritime Provinces			
AGENCY				FRB, Arctic Biological Station			
PRINCIPAL COOPERATING AGENCIES							
DATE:		FROM		TO		EFFORT (IN MAN YEARS)	
		1961		continuing		PROFESSIONAL ..1.0.... SUPPORT SERVICES 	
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)							
<p>GREY SEAL</p> <p>Aerial surveys have provided increasingly accurate assessments of numbers and distribution, especially in the breeding season (January and February), when pups born on land or ice are easily counted. Field parties of two or three men have visited breeding colonies to mark pups and study reproductive behaviour. Some feeding studies have been made, and parasites collected in order to assess the importance of this species as a vector of the codworm <u>Porrocaecum decipiens</u>.</p> <p>HARBOUR SEAL</p> <p>Population assessment of this species is difficult owing to its scattered nature, but some indication may be obtained from age analysis of jaws returned for the bounty. A life history study, including an assessment of this species' role as a vector of codworm is being made from observations and specimens collected incidentally to the grey seal study.</p>							
→ SCIENTIST IN CHARGE:						A. W. Mansfield	
THIS SPACE FOR CCO INDEXING							

PROJECT FORECAST

1969 - 1970

PROJECT NAME Natural history of whales, dolphins and porpoises			
LOCATION(S) West and Central Atlantic			
AGENCY FRB, Arctic Biological Station			
PRINCIPAL COOPERATING AGENCIES 			
DATE:	FROM 1965	TO Indefinite	EFFORT (IN MAN YEARS) <div style="display: flex; justify-content: space-between;"> PROFESSIONAL ... 1.0 ... </div> <div style="display: flex; justify-content: space-between;"> SUPPORT SERVICES ... 8.0 ... </div>
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S)) (MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>Life histories are being studied of Sei, Fin and Sperm whales, and of more than ten species of wild porpoises and dolphins. Tracing of movements and stock identity, and mark-recapture experiments to determine population levels, are being accomplished by marking larger whales; detailed shipboard censuses corroborate and relate resultant stock estimates to counts of commercially unfished species; and examination of industrially taken carcasses yield data allowing study of structure of populations. Surface temperature, water colour, meteorologic information and associations of prey and other animal species are documented and correlated with cetacean distribution and behaviour. The interaction of cetacean species in the wild is being studied.</p>			
<div style="text-align: right;"> → SCIENTIST IN CHARGE: <u>Dr. Edward Mitchell</u> </div>			
THIS SPACE FOR CCD INDEXING			



CANADA

CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969- 1970

PROJECT NAME Ecology and Production of Sea Mammals

LOCATION(S) Northwest Atlantic including Arctic

AGENCY FRB, Arctic Biological Station

PRINCIPAL COOPERATING AGENCIES

DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1951	indefinite	PROFESSIONAL ..1.0.... SUPPORT SERVICES ..1.0....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S).)
(MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Life histories have been studied of a number of species including harp seal, pilot whale, minke whale and white whale. Knowledge is accruing on the levels of population of the more important commercial species. Feeding rates are under study. Particular interest is being directed to the factors--including those of sea temperature, depth, food and competition--which define the niches of the constituent species. The study must therefore be related closely to synoptic knowledge of hydrography and of all levels of biological productivity in the northwest Atlantic.

—————→ SCIENTIST IN CHARGE: Dr. D. E. Sergeant

THIS SPACE FOR CCO INDEXING



CANADA

CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME

Regional studies of lobster (Homarus Americanus) populations

LOCATION(S)

Inshore Newfoundland

AGENCY

FRB Biological Station, St. John's, Nfld.

PRINCIPAL COOPERATING AGENCIES

Canada Dept. of Fisheries and Forestry

DATE:

FROM

1960

TO

Indefinite

EFFORT (IN MAN YEARS)

PROFESSIONAL

2

SUPPORT SERVICES

2½

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Biological samples are obtained from isolated lobster populations in regions of Newfoundland where there is a commercial fishery. The purpose is to compare length-weight relationships, growth, size at maturity, molting period and molt frequency, hatching and spawning periods. Samples are examined from the commercial catch to determine the percentage of first year recruits in the catch for different areas and years.

Several areas on the west coast have been investigated; studies are currently concentrated in Bonavista and Notre Dame Bays.

Migration is studied by tagging with Sphyrion, ferromagnetic

A small study area with a depth of 90-100 feet was selected, 120 numbered shelters were set, and lobsters marked with coloured bands on the claw. Territoriality, homing, seasonal movements, and reactions to changes in such physical parameters as light and temperature are studied by scuba diving at regular intervals.

Studies continuing in 1970

→ SCIENTIST IN CHARGE: G.F. Smith

THIS SPACE FOR CCO INDEXING



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME

Effect of environment and fishery upon cod stocks of ICNAF

LOCATION(S)

Division 31

Southeast Newfoundland and northwest Grand Bank

AGENCY

FRB Biological Station, St. John's, Nfld.

PRINCIPAL COOPERATING AGENCIES

DATE:

FROM

1952

TO

continuing

EFFORT (IN MAN YEARS)

(1969)

PROFESSIONAL

.....¹/₂.....

SUPPORT SERVICES

.....1¹/₂.....SUMMARY (PURPOSE, THEORY, PROCEDURE, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Research on various biological characters of the cod stocks (size and age composition, growth, spawning, maturity, food, fecundity, migration, mortality) to show the effects of the environment and the fishery upon the stocks. During peak fishing seasons monitoring commercial catches from the inshore fisheries at principal fishing centres, and using the A.T. Cameron for offshore work. Surface to bottom temperatures at each fishing stations.

Planned for continuing in 1970

→ SCIENTIST IN CHARGE: A.M. Fleming

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST

1969 - 1970

PROJECT NAME Biology and Ecology of Herring									
LOCATION(S) Newfoundland inshore waters and adjacent offshore banks									
AGENCY FRB Biological Station, St. John's, Nfld.									
PRINCIPAL COOPERATING AGENCIES Canada Dept. of Fisheries and Forestry									
DATE:	FROM 1966	TO indefinite	EFFORT (IN MAN YEARS) <table style="width: 100%; border: none;"> <tr> <td style="text-align: right; padding-right: 10px;">PROFESSIONAL</td> <td style="text-align: right; padding-right: 10px;">1½</td> <td style="text-align: right;">.....</td> </tr> <tr> <td style="text-align: right; padding-right: 10px;">SUPPORT SERVICES</td> <td style="text-align: right; padding-right: 10px;">3</td> <td style="text-align: right;">.....</td> </tr> </table>	PROFESSIONAL	1½	SUPPORT SERVICES	3
PROFESSIONAL	1½							
SUPPORT SERVICES	3							
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)									
<p> To assess the distribution and abundance of herring and their availability to the commercial fishery; to determine the utilization of the resource by the fishery and its effect on the status of the stocks; to describe the biological and other characteristics required to provide a basis for rational management; and to assess the role of the environment in relation to spawning, recruitment, migratory patterns and food supply. The investigation involves the use of an 84-foot research vessel for approximately 6 months to carry out sonar surveys, plankton, Isaacs-Kidd and midwater trawl tows together with the <u>usual hydrographic observations</u>, and the collection of herring samples for laboratory study from the commercial fishery and from research vessel catches. </p> <p> Research vessel used: "Investigator II". </p> <p style="text-align: center; margin-top: 20px;"> Planned to continue in 1970 </p>									
<div style="text-align: right; margin-bottom: 5px;">V.M. Hodder</div> <div style="text-align: center;"> → SCIENTIST IN CHARGE: ----- </div>									
THIS SPACE FOR CCO INDEXING									



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1970

PROJECT NAME

Greenland halibut distribution and abundance.

LOCATION(S)

Fortune and Hermitage Bays, Notre Dame Bay, the deep water 150-1000 fathoms to the east of Newfoundland.

AGENCY

FRB Biological Station, St. John's, Nfld.

PRINCIPAL COOPERATING AGENCIES

DATE:

FROM

1969

TO

continuing

EFFORT (IN MAN YEARS)

PROFESSIONAL

$\frac{1}{2}$

SUPPORT SERVICES

1

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Determination of relative abundance and distribution in relation to depth and temperature using 8 and 6 inch mesh monofilament gillnets in the bays, otter trawls in deep water down to 400 fathoms, and longlines beyond this.

Samples of otoliths for growth rate and year class strength will be collected. Surface to bottom temperatures at all fishing stations.

Research vessels used: "Marinus" and "A.T. Cameron"

→ SCIENTIST IN CHARGE:

W.H. Lear

THIS SPACE FOR CCO INDEXING

[illegible]



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME

Atlantic Salmon Racial Investigations

LOCATION(S)

Eastern North America, Greenland, Europe

AGENCY

FRB Biological Station, St. John's, Nfld.

PRINCIPAL COOPERATING AGENCIES

Dept. of Fisheries and Forestry, Resource Development Branch
(specimens)

DATE:

FROM

1968

TO

continuing

EFFORT (IN MAN YEARS)

PROFESSIONAL

... $\frac{1}{2}$...

SUPPORT SERVICES

... $\frac{1}{2}$...

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Investigation of morphometric and meristic characters of young salmon in streams, and adults from sea fisheries, in an attempt to find recognizable characters to distinguish fish originating from different geographic areas. Sea temperature observations in all fishing areas.

Research vessel used: "A.T. Cameron".

A.W. May

→ SCIENTIST IN CHARGE: -----

THIS SPACE FOR CCO INDEXING

CANADA

PROJECT FORECAST
1969 - 1970

PROJECT NAME Life history and ecology of the squid, <i>Illex illecebrosus</i>											
LOCATION(S) NW Atlantic											
AGENCY FRB, Biological Station, St. John's, Nfld.											
PRINCIPAL COOPERATING AGENCIES Bait Service; Canada Dept. of Fisheries and Forestry											
DATE:	FROM 1965	TO indefinite	EFFORT (IN MAN YEARS) <table style="width: 100%; border: none;"> <tr> <td style="width: 70%;">PROFESSIONAL</td> <td style="width: 30%; text-align: right;">0.7</td> </tr> <tr> <td></td> <td style="text-align: right;">.....</td> </tr> <tr> <td>SUPPORT SERVICES</td> <td style="text-align: right;">1.8</td> </tr> <tr> <td></td> <td style="text-align: right;">.....</td> </tr> </table>	PROFESSIONAL	0.7		SUPPORT SERVICES	1.8	
PROFESSIONAL	0.7										
										
SUPPORT SERVICES	1.8										
										
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.) <p style="margin-top: 10px;">Squid are sampled from the commercial fishery at selected areas of Newfoundland for studies on size distributions, growth, maturity, stomach contents and parasites. <u>Physical conditions are monitored in these areas and catch and effort statistics obtained.</u></p> <p style="margin-top: 10px;">Otter trawl surveys are made by the "A.T. Cameron" on the continental shelf from Newfoundland to Cape Hatteras. The purpose of these surveys is to supplement data from farther north in studies of life history and stock separation. Surface to bottom temperatures and salinities at all fishing stations.</p> <p style="margin-top: 20px; margin-left: 40px;">Planned to continue in Grand bank Nova Scotia Shelf area in 1970</p>											
<div style="text-align: right; margin-bottom: 10px;"> → SCIENTIST IN CHARGE: <u>W. J. ...</u> </div>											
THIS SPACE FOR CCO INDEXING											



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969 - 1970

PROJECT NAME

Oyster Transplant

LOCATION(S)

Two-Guts Barachois, west coast of Newfoundland

AGENCY

FRB Biological Station, St. John's, Nfld.

PRINCIPAL COOPERATING AGENCIES

Resource Development Branch, Canada Dept. of Fisheries and Forestry

DATE:

FROM

1965

TO

Indefinite

EFFORT (IN MAN YEARS)

PROFESSIONAL

0.1

SUPPORT SERVICES

0.2

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

A population of American oysters (Crassostrea virginica) transplanted from Prince Edward Island, is sampled monthly to assess growth, mortality and condition. The hydrographic regime in the area is monitored, temperature being recorded continuously.

SCIENTIST IN CHARGE:

M.C. Mercer

THIS SPACE FOR CCO INDEXING



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME

Groundfish survey

LOCATION(S)

Southwestern Grand Bank (ICNAF Div. 3N-30)

AGENCY

FRB, Biological Station, St. John's, Nfld.

PRINCIPAL COOPERATING AGENCIES

None

DATE:

FROM

TO

EFFORT (IN MAN YEARS)

1968

continuing

PROFESSIONAL

SUPPORT SERVICES

1	4	.....
3	4	.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Annual survey of stocks of the various species of groundfish on St. Pierre Bank, with special emphasis on cod and haddock, by "A.T. Cameron" with a view to estimating abundance of young and adult fish, studying relationship of distribution of fish in various years to environmental conditions and obtaining related information on the general biology of the various species (length, sex, maturity, weights, fecundity, etc.) for subsequent analyses at the Station. Surface to bottom temperatures at each fishing stations.

Planned to continue in 1970

SCIENTIST IN CHARGE:

A.T. Pinkhorn

THIS SPACE FOR CCO INDEXING

CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME

Groundfish egg and larvae survey

LOCATION(S)

The Grand Bank

AGENCY

FRB Biological Station, St. John's, Nfld.

PRINCIPAL COOPERATING AGENCIES

DATE:

FROM

1969

TO

continuing

EFFORT (IN MAN YEARS)

PROFESSIONAL

.....1.....

SUPPORT SERVICES

.....2.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

This is a project that will commence in 1969, as, what is expected to be, a regular survey in co-operation with other investigations at the St. John's station. It is hoped that it can be expanded, when more vessel time is available, to get an estimation of the relative annual abundance of eggs or larvae of various specimens of groundfish.

Research vessel used: "A.T. Cameron".

Surface temperature and salinity of all plankton collecting areas, surface to bottom temperatures at all bottom fishing areas.

Not planned for 1970

→ SCIENTIST IN CHARGE: T.K. Pitt

THIS SPACE FOR CCO INDEXING



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1970

PROJECT NAME

Monitor station 27

LOCATION(S)

2 nautical miles off Cape Spear near St. John's, Nfld.

AGENCY

FRB, Biological Station, St. John's, Nfld.

PRINCIPAL COOPERATING AGENCIES

DATE:

FROM

1950

TO

continuing

EFFORT (IN MAN YEARS)

PROFESSIONAL

.....

SUPPORT SERVICES

.....
1
4.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Year round monitoring station, temperatures and salinities,
surface to bottom, taken by Station research vessels,
especially "A.T. Cameron", entering and leaving port.
Observations made several times monthly.

The monitoring at Station 27 will be continued in 1970.

→ SCIENTIST IN CHARGE: -----

W. Templeman

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST

1969-1970

PROJECT NAME			
Labrador Current monitoring			
LOCATION(S)			
Across the Labrador Current from northern Labrador in north to eastern Grand Bank in the south.			
AGENCY			
FRB Biological Station, St. John's			
PRINCIPAL COOPERATING AGENCIES			
Department of Fisheries and Forestry. Fisheries Service by use of the Patrol Vessel "Cape Freels"			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	19	continuing	<div style="display: flex; justify-content: space-between;"> <div>PROFESSIONAL</div> <div>.....</div> </div> <div style="display: flex; justify-content: space-between;"> <div>SUPPORT SERVICES</div> <div>..... $\frac{1}{2}$.....</div> </div>
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>Six monitoring lines across the Labrador Current with large number at temperature and salinity stations, various depths, surface to bottom. Deep-sea reversing thermometers. Nansen bottles, BT's operated from 180 ft. patrol vessel "Cape Freels". Annually, July - August.</p> <p>This project carried out in 1969, planned to be continued with same arrangements in 1970.</p>			
<div style="display: flex; align-items: center;"> <div style="flex: 1; border-bottom: 1px dashed black; margin-bottom: 5px;"></div> <div style="margin-left: 10px;">SCIENTIST IN CHARGE:</div> </div>			W. Templeman
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1970

PROJECT NAME

Biology and fishery of cod

LOCATION(S)

Labrador, Eastern Newfoundland, eastern Gulf of St. Lawrence

AGENCY

FRB Biological Station, St. John's, Nfld.

PRINCIPAL COOPERATING AGENCIES

DATE:

FROM

1959

TO

continuing

EFFORT (IN MAN YEARS)

PROFESSIONAL

1

SUPPORT SERVICES

1½

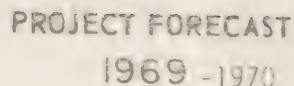
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Monitoring and surveys for research into life history and population dynamics of cod in the areas outlined. Studies include stock divisions, migrations, abundance, egg and larval surveys, age and growth, food, parasites and effects of the fishery upon the stocks. Surface to bottom temperatures at each fishing station.

Research vessel used: "A.T. Cameron".

→ SCIENTIST IN CHARGE: R. Wells

THIS SPACE FOR CCO INDEXING



PROJECT NAME			Biology and Ecology of Capelin
LOCATION(S)			Newfoundland inshore waters and adjacent offshore banks
AGENCY			FRB Biological Station, St. John's, Nfld.
PRINCIPAL COOPERATING AGENCIES			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1966	Indefinite	PROFESSIONAL .....1..... SUPPORT SERVICES .....1.....
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>The primary objectives are to describe the migratory pattern of Capelin, the physical and biological factors affecting the migrations and the seasonal distribution and composition of the stocks. Beach spawning surveys and the relevant environmental observations are conducted at selected locations in June-July. The offshore spawning concentrations are investigated on a 2 week cruise of a large research vessel in June or July. Environmental studies involve the use of an 84 foot research vessel to conduct bi-monthly survey cruises in Trinity Bay, Newfoundland. These cruises involve the use of plankton nets, Isaacs-Kidd trawl, midwater and bottom trawls for sampling the larvae juveniles and adults together with the usual hydrographic observations.</p> <p>Research vessels used: "Investigator II" and "A.T. Cameron".</p>			
		→ SCIENTIST IN CHARGE B.H. Winters	
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1970

PROJECT NAME

Ocean Aeromagnetics

LOCATION(S)

North Atlantic and Pacific Oceans,
or any water-covered area

AGENCY

DEM&R, Geological Survey of Canada

PRINCIPAL COOPERATING AGENCIES

National Research Council, National Aeronautical Establishment

DATE:

FROM

1962

TO

Indefinite

EFFORT (IN MAN YEARS)

PROFESSIONAL

...9....

SUPPORT SERVICES

...12....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

The primary objectives of this project are:

1. To conduct low-level high resolution aeromagnetic surveys over the Canadian continental shelves for purposes of delineating sedimentary basins.
2. To obtain and study magnetic data over the ocean basin in order to shed light on the theories of magnetic imprinting of oceanic rocks, ocean floor spreading and continental drift.

The North Star aircraft of the National Aeronautical Establishment, which is equipped with a high resolution digitally-recording rubidium-vapour magnetometer, is used for these surveys. Navigation is by electronic navigation techniques such as Loran A, Decca, and/or Doppler and Astro fixes.

→ SCIENTIST IN CHARGE: Dr. Peter J. Hood

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST
1969-1970

[illegible]



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME

Zooplankton Studies

LOCATION(S)

Halifax to Sargasso Sea

AGENCY

Institute of Oceanography, Dalhousie University

PRINCIPAL COOPERATING AGENCIES

DEM&R, MSB, AOL (Ships)

DATE:

FROM

1966

TO

Indefinite

EFFORT (IN MAN YEARS)

PROFESSIONAL

1
.....

SUPPORT SERVICES

2
.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Temporal changes in size frequency distribution of zooplankton in the western North Atlantic; continued study of light perception by crustaceans: zooplankton aggregations and thermal microstructure. Trophics of a Calanus population.

→ SCIENTIST IN CHARGE: C.M. Boyd

THIS SPACE FOR CCO INDEXING

CANADA

PROJECT FORECAST

1969 - 1970

PROJECT NAME					
Geophysical Studies					
LOCATION(S)					
Continental margin, Eastern Canada					
AGENCY					
Institute of Oceanography, Dalhousie University					
PRINCIPAL COOPERATING AGENCIES					
DEM&R, MSB, AOL (ships)					
DATE:		FROM		TO	
		1967		indefinite	
EFFORT (IN MAN YEARS)					
PROFESSIONAL				.2.....	
SUPPORT SERVICES				.....
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S)) MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.					
Geomagnetic depth sounding and magnetotelluric measurements; heat flow.					
SCIENTIST IN CHARGE: D. D. Hyndman					
THIS SPACE FOR CCO INDEXING					

PROJECT FORECAST

1969 - 1970

PROJECT NAME <div style="text-align: center; font-size: 1.2em;">Geophysical studies, North Atlantic</div>			
LOCATION(S) Continental margin, Eastern and Arctic Canada; Mid-Atlantic Ridge			
AGENCY Institute of Oceanography, Dalhousie University			
PRINCIPAL COOPERATING AGENCIES DEM&R, MSB, AOL (Ships)			
DATE:	FROM 1961	TO indefinite	EFFORT (IN MAN YEARS) <div style="display: flex; justify-content: space-between; align-items: flex-end;"><div>PROFESSIONAL</div><div>..1.....</div></div> <div style="display: flex; justify-content: space-between; align-items: flex-end;"><div>SUPPORT SERVICES</div><div>..3.....</div></div>
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.) <div style="text-align: center; padding: 20px 0;">Seismological studies of crust and mantle beneath the Appalachian system and continental margin; deep reflections from Mohorovicic discontinuity; geophysical studies of Mid-Atlantic Ridge; earth tilt caused by tidal loading in the Bay of Fundy.</div>			
SCIENTIST IN CHARGE: <u>M. J. Keen</u>			
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969 - 1970

PROJECT NAME			Biology of marine benthic organisms		
LOCATION(S)			Mainly Western North Atlantic Ocean		
AGENCY			Institute of Oceanography, Dalhousie University		
PRINCIPAL COOPERATING AGENCIES			Dept. F.M. & S. Marine Ecology Laboratory, Bedford Institute, (AOL) (ships) Dept. of Biology, Dalhousie University		
DATE:	FROM	TO	EFFORT (IN MAN YEARS)		
	1969	indefinite	PROFESSIONAL 7 SUPPORT SERVICES 5		
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)					
<p>1. <u>Deep-sea fauna.</u> Taxonomic and zoogeographic analysis of amphipod Crustacea from the North American basin will continue, emphasizing taxonomy of family groups (esp. Phoxocephalidae, Caprellidae, Pandaliscidae) and variation within species for evolutionary studies. The hypothesis of high latitude emergence of deep-sea fauna will be examined using Amphipoda from abyssal to shelf depths of the Drake Passage south of Chile collected during "Hudson 70" (Mills).</p> <p>2. <u>Inshore benthic and production ecology.</u> Continuing and expanded work on aquatic animals and benthic communities, emphasizing: a, numbers, biomass, population dynamics and productivity of benthic organisms in Nova Scotia coastal areas and Cape Cod Bay (Mills, D. Gordon, C. Levings, A. D. Michael) and the faunal history, species diversity, biogeography and productivity of isolated ponds on Sable Island (C. R. McKay); b, trophic and distributional relations between benthic fish and their prey, including detailed field studies (C. Levings) and theoretical modelling of fish production systems (S. R. Kerr); c. Computer treatment of information from benthic studies, largely by principal component analysis, to give objective groupings related to the physical and biological environment (Drs. R. N. Hughes and J. G. Field).</p>					
			SCIENTIST IN CHARGE: <u>Eric L. Mills</u>		
THIS SPACE FOR CCO INDEXING					



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969 - 1970

PROJECT NAME

Non-living Particulate Organic Matter in Sea Water

LOCATION(S)

Halifax to Sargasso Sea

AGENCY

Institute of Oceanography, Dalhousie University

PRINCIPAL COOPERATING AGENCIES

DEM&R, MSB, AOL (Ships)

DATE:

FROM

1965

TO

Indefinite

EFFORT (IN MAN YEARS)

PROFESSIONAL

1

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SUPPORT SERVICES

4

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SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Distribution of organic matter in various water masses of the western North Atlantic. Experimental studies of relations with zooplankton and bacteria. Collection and analysis of deep water zooplankton populations and investigations of their feeding relations. Collection and analysis of organisms living in or near the surface film.

—————> SCIENTIST IN CHARGE: G.A. Riley

THIS SPACE FOR CCO INDEXING

1969 - 1970

PROJECT NAME Analysis of Dissolved Organic Matter in Sea Water			
LOCATION(S)			
Halifax to Sargasso Sea			
AGENCY Institute of Oceanography, Dalhousie University			
PRINCIPAL COOPERATING AGENCIES			
DEM&R, MSB, AOL (Ships)			
DATE:	FROM 1965	TO indefinite	EFFORT (IN MAN YEARS) <div style="display: flex; justify-content: space-between;"> <div> PROFESSIONAL SUPPORT SERVICES </div> <div style="text-align: right;"> 4 </div> </div>
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p style="text-align: center;"> Determination of total organic matter (dry combustion of carbon) in various water masses of the western North Atlantic. Development of analytical methods for determination of amino acids and other biochemical constituents. Experimental studies of organic compounds, particularly hydrocarbons, produced in anoxic sea water. Other student projects on biochemical characterization of racial stocks of herring and an experimental study of the solubility of calcium carbonate in sea water under high pressure. </p>			
<div style="text-align: right; margin-right: 50px;"> SCIENTIST IN CHARGE: P. J. Wangersky </div>			
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969 - 1970

PROJECT NAME Production, Nutrition and Population Dynamics of Phytoplankton

LOCATION(S)

Halifax to Sargasso Sea

AGENCY

Institute of Oceanography, Dalhousie University

PRINCIPAL COOPERATING AGENCIES

DEM&R, MSB, AOL (ships)

DATE:

FROM

1966

TO

indefinite

EFFORT (IN MAN YEARS)

PROFESSIONAL

1

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SUPPORT SERVICES

4

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SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

A quantitative investigation of environmental factors controlling primary production and extracellular release of organic substances as determined by in situ carbon-14 studies, together with measurements of pertinent environmental factors. Resolution by autoradiography of primary production rates for individual organisms. A physiological study of nitrogen metabolism in diatoms. Development of a population growth model and digital computer techniques for analysis of data from chemostat cultures. Seasonal variations of planktonic associations in the Baie des Chaleurs and an analysis of interspecies association tendencies by computerized application of multiple regression techniques. Studies of phosphorus balance and seasonal succession of phytoplankton in Bedford Basin.

—————→ SCIENTIST IN CHARGE: W.D. Watt

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST 1969 - 1970

PROJECT NAME The Evaluation of the Performances of Water Level Recording Instruments			
LOCATION(S) Saint John, N.B.			
AGENCY DEM&R, MSB, Oceanographic Research, Tides and Water Levels, Ottawa			
PRINCIPAL COOPERATING AGENCIES Water Survey of Canada, Inland Waters Branch, Department of Energy, Mines and Resources			
DATE:	FROM July 1969	TO December 1969	EFFORT (IN MAN YEARS) <div style="display: flex; justify-content: space-between;"> <div> PROFESSIONAL SUPPORT SERVICES </div> <div style="text-align: right;"> 1/6 1/4 </div> </div>
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>To test the performance of various water level recording instruments and evaluate them according to the errors in their collected data.</p> <p>All these instruments are installed in the same well at Saint John Harbour, and the regular check against the sight gauge are made to ensure the operation of the instruments.</p> <p>The results from this test will be used to evaluate the instrument, to establish a correction measure if necessary, and to provide some guideline for improving their performance.</p>			
<div style="text-align: right; margin-bottom: 10px;"> L.F. 80 </div> <div style="display: flex; align-items: center; justify-content: center;"> → SCIENTIST IN CHARGE: </div>			
THIS SPACE FOR CCO INDEXING			

PROJECT FORECAST 1969- 1970

PROJECT NAME			The Variation of Tidal Constituents		
LOCATION(S)			Saint John, N.B. and Victoria, B.C.		
AGENCY			DEM&R, MSB, Oceanographic Research, Tides and Water Levels, Ottawa		
PRINCIPAL COOPERATING AGENCIES					
DATE:	FROM	TO	EFFORT (IN MAN YEARS)		
	January 1969	December 1969	PROFESSIONAL	1/6	.....
			SUPPORT SERVICES		.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

The constituents at Saint John, N.B. and Victoria, B.C. are computed for the past 20 years. The stability of the constituent is defined and computed. The predicted errors due to the variation of constituent are calculated to determine the selection of constituent for the prediction purpose.

L.F. Ku

→ SCIENTIST IN CHARGE: _____

THIS SPACE FOR CCO INDEXING

[illegible]

PROJECT FORECAST
1969 - 1970

PROJECT NAME			Storm Surge Calculations		
LOCATION(S)			The Gulf of St. Lawrence		
AGENCY			Department of Energy, Mines and Resources Marine Sciences Branch, Oceanographic Research, Ottawa, Ontario		
PRINCIPAL COOPERATING AGENCIES			The data was obtained from the Meteorological Branch of the Federal Department of Transport.		
DATE:	FROM	TO	EFFORT (IN MAN YEARS)		
	January	December	PROFESSIONAL	1 Scientist	
			SUPPORT SERVICES	1 Programmer	
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)					
The purpose of this project is to develop numerical models for Storm Surge Calculations in the Gulf of St. Lawrence. Both linear and nonlinear models are being attempted. Using Hindcasting for previous storms the models will be tested for their accuracy and reliability.					
SCIENTIST IN CHARGE: F.S. Murty					
THIS SPACE FOR CCO INDEXING					



CANADA

CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969 - 1970

PROJECT NAME Wind-generated currents in the Gulf of St. Lawrence

LOCATION(S)

Gulf of St. Lawrence
The procedure is applicable generally

AGENCY DEM&R, MSB, Oceanographic Research Division, Ottawa

PRINCIPAL COOPERATING AGENCIES

The wind stress data for these calculations is obtained from a technical report by Blackford and Tsang (1964). Other useful information is obtained from reports by W.D. Forrester.

DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	January	December	PROFESSIONAL ... 1 SUPPORT SERVICES ... 1

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S))
(MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

The purpose is to study the wind-generated currents in the Gulf of St. Lawrence for homogeneous and two-layer cases appropriate to the summer and winter situations.

1. Vertical current structures: The model developed by Hassan with the neglect of the vertical velocity will be used. Calculations will be similar to those of Blackford excepting that he used an electrical analog technique and he did not explicitly take the islands into consideration.

2. Surface current structure: A vertically integrated hydrostatic model incorporating bottom friction and actual depth configuration of the Gulf will be used.

3. Two-layer model: The Gulf will be divided into two layers, each layer being assumed as homogeneous and hydrostatic. This gives a system of two coupled equations which have to be solved alternately.

These 3 models are formulated in terms of the stream function and the set of equations have to be solved simultaneously at all the grid points. Two different methods will be used for this: (a) The successive over-relaxation method. (b) The Gauss method involving matrix inversion.

→ SCIENTIST IN CHARGE: T.S. Murty

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST
1969-1970

PROJECT NAME			Storm Surge in the Gulf of St. Lawrence		
LOCATION(S)			Gulf of St. Lawrence		
AGENCY			DEM&R, MSB, Oceanographic Research Division, Ottawa		
PRINCIPAL COOPERATING AGENCIES					
<p>The Meteorological data for the input has been obtained from the Maritime Weather Office at Halifax. The Oceanographic data for comparison with the output has been obtained from the Tides and Water Levels Division, Marine Sciences Branch, Ottawa.</p>					
DATE:	FROM	TO	EFFORT (IN MAN YEARS)		
	January	December	PROFESSIONAL 1 scientist SUPPORT SERVICES 1 programmer		
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)					
<p>The purpose of this project is to compute the storm surge by numerical integration of the dynamic equations, in the Gulf of St. Lawrence due to the storm of March 2 and 3, 1965. This storm travelled over the Gulf with an average speed of 23 miles per hour in a northeasterly direction from Chaleur Bay and crossed the Newfoundland Coast at Lark Harbour on March 2 and caused the highest sea level ever observed there.</p> <p>The input data for these calculations is the wind stress on the sea surface. Strangely, the winds associated with this storm are light, hence it has been decided to use the surface pressure field to calculate the wind stress. This surface pressure field is obtained from 3 hourly weather maps prepared by the Maritimes Weather Office at Halifax. A uniform grid of roughly 12 miles will be employed and quadratic bottom friction will be used.</p> <p>The theoretically calculated storm surge will be compared with the predicted storm surge which is defined as the difference between the predicted astronomical tide and the observed sea level.</p>					
SCIENTIST IN CHARGE: <u>T.S. Murty</u>					
THIS SPACE FOR CCO INDEXING					



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969-1970

[illegible]

PROJECT FORECAST

1969-1970

PROJECT NAME		Suspended matter in seawater	
LOCATION(S)		Gulf of St. Lawrence	
AGENCY		Marine Sciences Centre, McGill University	
PRINCIPAL COOPERATING AGENCIES		National Research Council (grant)	
DATE	FROM	TO	EFFORT (IN MAN YEARS)
	1969	1970	PROFESSIONAL ¹ SUPPORT SERVICES
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>The distribution of total suspended matter in the Gulf and its relationship to hydrographic parameters are being investigated. The chemical and mineralogical composition of the inorganic fraction is also studied. Size distribution is being measured and the filter residues are being examined by electron-microscopy. Rates of transport are being assessed at various locations. An attempt is made to draw a general budget for the suspended matter in the Gulf. Observations in the St. Lawrence estuary are also planned.</p>			
—————→ SCIENTIST IN CHARGE: _____			
THIS SPACE FOR CCO INDEXING			

1969 - 1970

PROJECT NAME			
Recent and Pleistocene Sediment of the Barbados Ridge			
LOCATION(S)			
Ridge between Barbados and Tobago			
AGENCY			
Marine Sciences Centre, McGill University			
PRINCIPAL COOPERATING AGENCIES			
National Research Council			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1967	Indefinite	PROFESSIONAL SUPPORT SERVICES
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p> Sediment cores have been collected along the top of the Barbados Ridge during the 1968 CHV HUDSON Cruise in the Caribbean. The purpose is to investigate the effect on sediment of long-term changes in the regime of the Equatorial Inflow to the north and in the Orinoco influences to the south. More than three meters of foraminiferal oozes resting over fairly homogeneous greenish-gray muds have been collected on the northern half of the ridge. Paleontological studies of glacial events are being made and paleomagnetic correlations are also being attempted. A detailed mineralogical examination of the cores is being carried out. </p>			
<div style="text-align: right;"> → SCIENTIST IN CHARGE: <u>B.R. d'Anglejan</u> </div>			
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969 - 1970

PROJECT NAME Time Series Study of Oceanographical Parameter in the Barbados Region			
LOCATION(S) Barbados			
AGENCY Marine Sciences Centre, McGill University			
PRINCIPAL COOPERATING AGENCIES			
DATE:	FROM 1968	TO Indefinite	EFFORT (IN MAN YEARS) <div style="display: flex; justify-content: space-between;"> PROFESSIONAL ...1..... </div> <div style="display: flex; justify-content: space-between;"> SUPPORT SERVICES </div>
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>Transport variation between Barbados and Tobago, and variability study from a "fix station" near Barbados.</p>			
<div style="text-align: right; margin-bottom: 10px;">O.M. Johannessen</div> <div style="display: flex; align-items: center; justify-content: center;"> → SCIENTIST IN CHARGE: R. Glombitza </div>			
THIS SPACE FOR CCO INDEXING			

PROJECT NAME			
Ice Drift in Gulf of St. Lawrence			
LOCATION(S)			
Gulf of St. Lawrence			
AGENCY			
Marine Sciences Centre, McGill University			
PRINCIPAL COOPERATING AGENCIES			
Defence Research Board, Ottawa, Bedford Institute Department of Transport, Marine Operation, N.R.C.			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1966	1970	<div style="display: flex; justify-content: space-between;"> 69-70 </div> <div style="display: flex; justify-content: space-between;"> PROFESSIONAL 3... </div> <div style="display: flex; justify-content: space-between;"> SUPPORT SERVICES 3... </div>
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>To do basic research in ice drift problems, with the aim of modeling ice drift prediction methods.</p> <p>For the 1970 season a ship will be frozen into an ice floe and reflectors set out in a triangle configuration to record differential movement of the ice field. Observation of meteorological and oceanographical parameters will be collected.</p>			
<div style="display: flex; align-items: center;"> <div style="flex-grow: 1; border-bottom: 1px dashed black; position: relative;"> → SCIENTIST IN CHARGE: </div> <div style="margin-left: 10px;"> O.M. Johannessen E.R. Pounder </div> </div>			
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969 - 1970

[illegible]



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME

Primary Production

LOCATION(S)

Barbados

AGENCY

Marine Sciences Centre, McGill University

PRINCIPAL COOPERATING AGENCIES

National Research Council of Canada (grants)

DATE:

FROM

TO

EFFORT (IN MAN YEARS)

Continuing

PROFESSIONAL

....1.....

SUPPORT SERVICES

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SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Continuation of studies on the relation between primary production, hydrographic conditions, with special reference to the thermocline.

A station is occupied for 7 to 9 days during a three weeks period in June and again in December - January.

Carbon-14 fixation, chlorophyll - a and plankton concentrations, temperature and salinity are measured throughout at five depths between 10 and 100 meters.

The thermocline shifts between 35 and 75 meters, possibly due to internal waves. There is marked difference between summer and winter. There is a chlorophyll and diatom maximum below the mixed layer in December but not in June.

→ SCIENTIST IN CHARGE: D.M. Steven

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST

1969 - 1970

PROJECT NAME Primary and Secondary Production			
LOCATION(S) (a) Barbados (b) Prince Edward Island			
AGENCY Marine Sciences Centre, McGill University			
PRINCIPAL COOPERATING AGENCIES National Research Council of Canada (grants)			
DATE: (a) (b)	FROM June 1968 May 1969	TO 1970 & poss. 1970	EFFORT (IN MAN YEARS) <div style="display: flex; justify-content: space-between;"> PROFESSIONAL 1 + 1 </div> <div style="display: flex; justify-content: space-between;"> SUPPORT SERVICES </div>
SUMMARY (PURPOSE, THEORY, PROCEDURE, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.) <div style="padding: 10px;"> <p>Studies of primary and secondary production in relation to nutrient concentrations and other factors in shallow off-shore waters,</p> <p>(a) off Barbados (Mr. Finn Sander);</p> <p>(b) in Malpeque Bay, P.E.I. (Mr. Alan McIver).</p> </div>			
Dr. D. M. Steven			
—————> SCIENTIST IN CHARGE: -----			
THIS SPACE FOR CCO INDEXING			

PROJECT FORECAST

1969 - 1970

[illegible]

PROJECT FORECAST

1969 - 1970

[illegible]



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1970

PROJECT NAME

Estuarine and Inlet Plankton in Newfoundland Waters

LOCATION(S)

Bonne Bay, St. John's Harbour, Aquaforte Bay, etc.

AGENCY

Dept. Biology and Marine Sciences Research Laboratory, Memorial University of Nfld.

PRINCIPAL COOPERATING AGENCIES

NRC

FRB

DATE:

FROM

1968

TO

Indefinite

EFFORT (IN MAN YEARS)

PROFESSIONAL

.. $\frac{1}{4}$

SUPPORT SERVICES

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SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Inshore waters of Newfoundland have hardly been examined in the past, and little has been done in comparable waters elsewhere. It is proposed to study the seasonal distribution of plankton quantitatively at Bonne Bay, which is a fjord on the west coast of Newfoundland. For comparative purposes it is proposed to study the quantitative seasonal distribution at Aquaforte Bay on the east coast (Avalon Peninsula).

In addition it is proposed to compare the Aquaforte Bay information, as representative of unpolluted waters, with quantitative studies from St. John's Harbour, into which domestic and other wastes from St. John's and its suburbs are disposed, in an effort to determine the degree of eutrophication of St. John's Harbour. In connection with this study, measurements will be made of certain physical and chemical parameters, particularly dissolved oxygen, temperature, etc.

Furthermore, it is proposed to conduct a qualitative survey of the zoo-plankton of as many estuaries, bays and fjords around the coast of Newfoundland as is feasible. Particular emphasis will be placed on waters impounded behind barrachois or sand bars, most of which are brackish because of river or stream outlets into them.

→ SCIENTIST IN CHARGE: ---C.C. Davis---

THIS SPACE FOR CCU INDEXING



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST 1969-1977

1969-197

PROJECT NAME Behaviour of Rock Boring Clams		
LOCATION(S) Newfoundland		
AGENCY Marine Sciences Research Laboratory, Memorial University of Newfoundland		
PRINCIPAL COOPERATING AGENCIES NRC (grant)		
DATE:	FROM March 1968	TO Indefinite
		EFFORT (IN MAN YEARS) PROFESSIONAL ...1..... SUPPORT SERVICES
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S)) (MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)		
<p>To investigate the effects of gravity, light, temperature, rock hardness and other environmental factors on the boring behaviour of <u>Zirfae crisptata</u>.</p> <p>Artificial substrates and time lapse movies are used in this study.</p>		
→ SCIENTIST IN CHARGE J.W. Evans		
THIS SPACE FOR CCO INDEXING		

LOCATION(S)

AGENCY

PRINCIPAL COOPERATING AGENCIES

DATE:

March 1968

PROFESSIONAL

1

SUPPORT SERVICES

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SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S))
(MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

To investigate the effects of gravity, light, temperature, rock hardness and other environmental factors on the boring behaviour of Zirfae crisptata.

Artificial substrates and time lapse movies are used in this study.

SCIENTIST IN CHARGE

J. W. Evans

THIS SPACE FOR CCO INDEXING



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1970

PROJECT NAME

Ecology of the Freshwater Amphipods of Newfoundland

LOCATION(S)

Newfoundland

AGENCY

Biology Department, Memorial University of Newfoundland

PRINCIPAL COOPERATING AGENCIES

Development Branch, Fisheries Research Board of Canada

DATE:

FROM

15/5/66

TO

1969

EFFORT (IN MAN YEARS)

PROFESSIONAL

... 4 ...

SUPPORT SERVICES

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SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

A study of the distribution and abundance of the freshwater amphipods of the Island of Newfoundland and the nearby portions of the mainland in relation to the influences of existing and historical, physical and biotic factors.

→ SCIENTIST IN CHARGE: D.H. Steele

THIS SPACE FOR CCO INDEXING

CANADA

PROJECT FORECAST 1969-1977

[illegible]

PROJECT FORECAST

1969 - 1970

PROJECT NAME GEOPHYSICAL SURVEY OFF BRITISH COLUMBIA COAST			
LOCATION(S) WEST OF QUEEN CHARLOTTE ISLANDS AND NORTH OF VANCOUVER ISLAND BETWEEN LATITUDES 51°N AND 54°N AND LONGITUDES 129°W AND 136°W.			
AGENCY DEM&R, MSB, ATLANTIC OCEANOGRAPHIC LABORATORY, BEDFORD INSTITUTE			
PRINCIPAL COOPERATING AGENCIES MARINE GEOPHYSICS GROUP UNIVERSITY OF BRITISH COLUMBIA, VANCOUVER DOMINION OBSERVATORY, OTTAWA DALHOUSIE UNIVERSITY, HALIFAX			
DATE:	FROM 1970	TO 1971	EFFORT (IN MAN YEARS) <div style="display: flex; justify-content: space-between;"> PROFESSIONAL ...3..... </div> <div style="display: flex; justify-content: space-between;"> SUPPORT SERVICES ...3..... </div>
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.) <p style="margin: 10px 0;"> The tectonic structures which lie off the west coast of Canada are very different from those off the east coast. To understand the mechanism responsible for creating such major differences a systematic detailed geophysical survey is planned for an area which lies immediately west of Queen Charlotte Islands. The measurements to be made during this cruise include gravity, magnetic, bathymetry, seismic reflection and refraction, coring, dredging, heat flow and bottom photography. The navigation during the survey will be maintained using Satellite, Omega receivers and moored radar transponder buoys. This cruise forms a part of the HUDSON 70 expedition around the Americas. </p>			
<div style="display: flex; align-items: center; justify-content: flex-end;"> <div style="margin-right: 10px;">→</div> <div> SCIENTIST IN CHARGE S.P. SRIVASTAVA, K.G. SHIH, C. KEEN </div> </div>			
THIS SPACE FOR CCO INDEXING			

CANADA

PROJECT FORECAST 1969-197

PROJECT NAME			Forecasting the Physical State of the Ocean		
LOCATION(S)			Eastern Subarctic Pacific Ocean		
AGENCY			DND, MARPAC, Meteorology/Oceanography, Comox, B.C.		
PRINCIPAL COOPERATING AGENCIES			POG, DREP		
DATE:	FROM	TO	EFFORT (IN MAN YEARS)		
	1960	Indefinite	PROFESSIONAL	4	.....
			SUPPORT SERVICES	4	.....
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)					
<p style="margin-left: 40px;">Using basic information provided by the Maritime Command Pacific, Meteorological/Oceanographic Office, Esquimalt, forecasts of the physical structure of the ocean are provided.</p> <p style="margin-left: 40px;">The above information is updated and extended using all the available newly observed data and the meteorological forecast for the area.</p>					
			WSC Wallace BMetO		
			<div style="display: flex; align-items: center;"> <div style="flex: 1; border-bottom: 1px dashed black; margin-right: 10px;"></div> SCIENTIST IN CHARGE: </div>		
THIS SPACE FOR CCO INDEXING					



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME

Oceanographic Information Service

LOCATION(S)

Pacific Ocean Lat. 35°N to 60°N, eastward of Long. 160°W

AGENCY

DND, Maritime Forces Pacific

PRINCIPAL COOPERATING AGENCIES

Department of Transport
Fisheries Research Board (POG)
United States Navy (Bathymograph reports by radio)

DATE:

FROM

1958

TO

Indefinite

EFFORT (IN MAN YEARS)

PROFESSIONAL

0.3
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SUPPORT SERVICES

0.9
.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Bathymograph data received by radio are analyzed according to the OCEAN model of water structure developed by POG and a weekly composite chart depicting:

- a) Potential layer depth
- b) Depth of bottom of thermocline
- c) Magnitude of thermocline

produced. A sea surface temperature chart is issued twice per week. The charts are distributed to a number of agencies in Canada and abroad: military, fisheries, universities, etc.

Sea surface temperature data are taken from the synoptic weather reports made by most ocean-going ships and from CTEM collectives transmitted by naval ships. Principal suppliers of bathymograph data are ships of the RCN, USN, CCG and USCG.

The work is carried out by the staff of the Maritime Forces Weather Centre. Professional staff involved are DOT Meteorologists. Canadian Forces meteorological technicians process data, plot charts, etc.

The Information Service operates year round.

M. Blake

→ SCIENTIST IN CHARGE: -----

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST

1969- 1970

PROJECT NAME Oceanic-Coastal Project							
LOCATION(S) NE Pacific Ocean, Queen Charlotte Sound, Hecate Strait.							
AGENCY Fisheries Research Board of Canada, Pacific Oceanographic Group							
PRINCIPAL COOPERATING AGENCIES Defence Research Board (CNAV ENDEAVOUR) Department of Energy, Mines and Resources (Marine Sciences Branch)							
DATE:	FROM 1967	TO Continuing	EFFORT (IN MAN YEARS) <table style="width: 100%; border: none;"> <tr> <td style="text-align: right; padding-right: 10px;">PROFESSIONAL</td> <td style="text-align: right;">.0.7.....</td> </tr> <tr> <td style="text-align: right; padding-right: 10px;">SUPPORT SERVICES</td> <td style="text-align: right;">.2.....</td> </tr> </table>	PROFESSIONAL	.0.7.....	SUPPORT SERVICES	.2.....
PROFESSIONAL	.0.7.....						
SUPPORT SERVICES	.2.....						
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)							
<p>The coastal waters from Washington to Alaska and to about 200 miles offshore are being studied primarily for seasonal and year-to-year variations in physical and chemical properties. The study is partly designed in support of investigations on groundfish and development of strong and weak year-classes during some years.</p> <p>Continuous records of temperature and salinity with depth are obtained using an STD. Anchored buoy arrays will be used for a continuous monitor of temperature and currents on the continental shelf.</p> <p>During 1970, two cruises are planned for late winter and late autumn.</p>							
<div style="text-align: right;"> → SCIENTIST IN CHARGE: _____ A. J. HARRIS </div>							
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CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME
Oceanographic Studies Associated with Lobster Transplants

LOCATION(S)

Fatty Basin, Rainy Bay, Useless Inlet, Barkley Sound

AGENCY

Fisheries Research Board of Canada, Pacific Oceanographic Group

PRINCIPAL COOPERATING AGENCIES

Fisheries Research Board of Canada, Fisheries Biology Group
Canadian Hydrographic Service

DATE:**FROM**

1964

TO

Indefinite

EFFORT (IN MAN YEARS)**PROFESSIONAL**

0.3

.....

SUPPORT SERVICES

0.5

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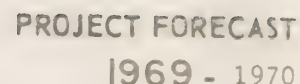
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Preliminary oceanographic examination of Fatty Basin was carried out in 1964-65 to determine its suitability for a lobster transplant. This has been reported in a manuscript report.

It is now proposed to carry out further oceanographic observations, in conjunction with work being planned for 1970 by this Station's Lobster Investigation. Primary emphasis will be on circulation during the first larval stages (pelagic) of the lobster. It is proposed to continuously record temperatures, salinity, sea level, currents, and winds. Surface circulation will be observed by standard techniques using floats, drift cards, supplemented by aerial photography. Dissolved oxygen will be monitored regularly at selected stations.

→ **SCIENTIST IN CHARGE:** R.H. Herlinveaux

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CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969 - 1970

PROJECT NAME
Plankton Dynamics

LOCATION(S)

Nanaimo, Ocean Station P

AGENCY

Fisheries Research Board of Canada, Environmental Research Group

PRINCIPAL COOPERATING AGENCIES

Department of Transport, Marine Services, Canadian Coast Guard
Department of Energy, Mines and Resources, Marine Sciences Branch

DATE:

FROM

1967

TO

continuing

EFFORT (IN MAN YEARS)

PROFESSIONAL

1
.....

SUPPORT SERVICES

1
.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

The purpose is to delineate interactions between primary and secondary production in order to facilitate the estimation of zooplankton, and higher production from field data.

A computer simulation model, incorporating recent experimentally determined relations, is used to examine the implications of different grazing schemes, of variability in estimates of parameters, and of some forms of patchiness for production by plankton populations.

Elaboration and testing of the model will continue in association with laboratory and field observations.

C.D. McAllister

→ SCIENTIST IN CHARGE: -----

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST

1969-1970

PROJECT NAME Biological Productivity - oceans			
LOCATION(S) North Pacific from approximately 40° to 60°N and including the Subarctic water mass.			
AGENCY Fisheries Research Board of Canada, Environmental Research Group			
PRINCIPAL COOPERATING AGENCIES Department of Transport (Weatherships) Royal Canadian Navy (vessels) Smithsonian Institution (data) University of Washington (data) U.S. Navy (data)			
DATE:	FROM 1965	TO 1969	EFFORT (IN MAN YEARS) <div style="display: flex; justify-content: space-between;"> <div>PROFESSIONAL</div> <div>1.0</div> </div> <div style="display: flex; justify-content: space-between;"> <div>SUPPORT SERVICES</div> <div>1.0</div> </div>
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>The purpose of this program is to conduct large-scale studies on biological oceanographic variability. The collection of data in the area will be carried out, as far as possible, using existing platforms such as commercial vessels, satellites and weatherships. During 1970, the program will consist of observations at Station P and from American Mail Line vessels.</p> <p>Aspects of this program dealing with zooplankton will be carried out by <u>R.J. LeBrasseur</u> and <u>C.D. McAllister</u>.</p>			
T.R. Parsons —————→ SCIENTIST IN CHARGE; -----			
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CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1970

PROJECT NAME

Biological Productivity - coastal

LOCATION(S)

Strait of Georgia and adjacent inlets

AGENCY

Fisheries Research Board of Canada, Environmental Research Group

PRINCIPAL COOPERATING AGENCIES

Royal Canadian Navy (vessels)
Department of Transport (vessels)
Institute of Oceanography, UBC (graduate students)
Department of Energy, Mines and Resources (vessels and apparatus)

DATE:

FROM

1965

TO

1969

EFFORT (IN MAN YEARS)

PROFESSIONAL

4
.....
4

SUPPORT SERVICES

.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

The purpose of this program is to understand the processes of organic production in the marine environment and in particular to determine how the supply of food to various trophic levels is influenced by the environment. In attempting to achieve this purpose, the program has been designed to include studies on primary and secondary production and on larval and juvenile fish. During 1970 data accumulated during previous years will be analyzed and a report on the findings of the program will be written.

Various phases of this program are conducted by R.J. LeBrasseur,
C.D. McAllister and W.E. Barraclough.

T.R. Parsons

→ SCIENTIST IN CHARGE: -----

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST

1969 - 1970

PROJECT NAME Surface and subsurface current velocities in the Strait of Georgia											
LOCATION(S) Strait of Georgia											
AGENCY Fisheries Research Board of Canada, Pacific Oceanographic Group											
PRINCIPAL COOPERATING AGENCIES Canadian Hydrographic Service, Department of Energy, Mines and Resources (Victoria) (vessels)											
DATE:	FROM April 1969	TO July 1970	EFFORT (IN MAN YEARS) <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">PROFESSIONAL</td> <td style="width: 30%; text-align: right;">0.8</td> </tr> <tr> <td></td> <td style="text-align: right;">.....</td> </tr> <tr> <td>SUPPORT SERVICES</td> <td style="text-align: right;">1</td> </tr> <tr> <td></td> <td style="text-align: right;">.....</td> </tr> </table>	PROFESSIONAL	0.8		SUPPORT SERVICES	1	
PROFESSIONAL	0.8										
										
SUPPORT SERVICES	1										
										
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S). MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)											
<p>During 1970 the series of current measurements from a line of 3 stations between the mainland and Vancouver Island will be continued until July 1970 when one year's data would be obtained. Data processing and analysis will be made as data are obtained. The data will first be examined for tidal components, then for those due to other factors such as winds and sea level fluctuations.</p>											
<div style="text-align: right; margin-bottom: 10px;">S. Tabata</div> <div style="text-align: center;"> → SCIENTIST IN CHARGE: ----- </div>											
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CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME
Circulation of Northeast Pacific Ocean

LOCATION(S)
Northeast Pacific Ocean - area bounded by Pacific coast of North America, longitude 160°W to the West and latitude 45°N to the south

AGENCY
Fisheries Research Board of Canada, Pacific Oceanographic Group

PRINCIPAL COOPERATING AGENCIES

Marine Sciences Branch, Systems Analysis Division, Ottawa
Canadian Oceanographic Data Centre.

DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1964	1971	PROFESSIONAL 0.1 SUPPORT SERVICES 0.3

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

The circulation of the Northeast Pacific Ocean is being studied from oceanographic data collected mainly during the 12 "North Pacific" cruises from 1955 through 1962, and on weather ship patrols at Station P and Line P during 1956 through 1962. It is hoped to describe in more detail than in the past, the features of the circulation in the region. Particular attention is paid to eddies and meanders. Geostrophic flow at the surface and at certain depths relative to the 1000 decibar surface, isentropic flow deduced from the use of isentropic analysis, and geostrophic flow on isentropic surfaces between the depths of 100m and 1000m will be examined to obtain a coherent circulation pattern. The results of this research should permit the assessment of the general type of surveys needed to investigate further the oceanographic processes occurring in the region, including those associated with the complicated eddy-meander systems which appear to be occurring.

This study has been pursued in the past by summer employees under the direction of the scientist in charge. It is hoped that this routine will be maintained in 1970.

The computations of acceleration potentials for all Canadian cruises have been made by the Marine Sciences Branch, Ottawa. Data from several U.S. sources have been obtained and therefore, for completeness, these will be examined also in the same manner. These include data from 1949 to 1967.

→ **SCIENTIST IN CHARGE:** S. Tabata

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PROJECT FORECAST

1969 - 1970

[illegible]



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME

Alberni Inlet Pollution Studies

LOCATION(S)

Alberni Harbour

AGENCY

Fisheries Research Board of Canada, Pacific Oceanographic Group

PRINCIPAL COOPERATING AGENCIES

MacMillan and Bloedel Ltd.
Department of Fisheries

DATE:

FROM

1954

TO

Indefinite

EFFORT (IN MAN YEARS)

PROFESSIONAL

...0.2...

SUPPORT SERVICES

...0.5...

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Following the 20 month program of monthly oceanographic surveys in the upper portion of Alberni Inlet from June 1965 to January 1967, about 3 surveys per year have been conducted to measure seasonal changes in the inlet. A full-scale survey of the whole inlet was carried out in August 1968. A data record covering all surveys from 1954 to 1967 was released in 1968.

Surveys at selected periods in the year will be continued in 1969. It is planned to test available mathematical models on oxygen balance in Alberni Inlet and to compare results with observations at different seasons.

→ SCIENTIST IN CHARGE: M. Waldichuk

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST

1969 - 1970

PROJECT NAME			
Ladysmith Harbour Circulation in Relation to Oyster Pollution			
LOCATION(S)			
Ladysmith Harbour			
AGENCY			
Fisheries Research Board of Canada, Pacific Oceanographic Group			
PRINCIPAL COOPERATING AGENCIES			
Department of Energy, Mines and Resources, Hydrographic Service - Continuous current and tidal observations.			
Department of Fisheries - vessel THRASHER ROCK			
British Columbia Department of Health Services and Hospital Insurance, Division of Laboratories - bacteriological analyses.			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1966	1969	PROFESSIONAL .....2... SUPPORT SERVICES .....5...
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S)) (MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>Commencing in March 1966, this program continued to the end of 1968 in its field phase, with monthly oceanographic and bacteriological observations at 12 stations.</p> <p>During 1969, the data collected will be analyzed and reported. It is hoped that sufficient information is now available to satisfy the needs of the B.C. Health Branch, concerning any new action on oyster leases closed in 1963 because of sewage pollution. Further short experiments, such as dye releases from the sewage outfall, will be conducted in 1969, if there is a need for such information.</p>			
			M. Waldichuk
→ SCIENTIST IN CHARGE: -----			
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME Eutrophication studies in an Urban Marine Inlet

LOCATION(S) Victoria Harbour, The Gorge and Portage inlet

AGENCY Fisheries Research Board of Canada, Pacific Oceanographic Group

PRINCIPAL COOPERATING AGENCIES

Reference Research Establishment Pacific (launch SYNE WAVE)
Canadian Hydrographic Service (tidal records)

DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1965	1969	PROFESSIONAL ... 0.2 SUPPORT SERVICES ... 0.5

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Monthly oceanographic surveys in Victoria Harbour, the Gorge and Portage Inlet have been continued from August 1965 to December 1968. Temperatures and tide levels have been recorded continuously at selected locations during the last two years. Sampling in the drainage basin of Portage Inlet was carried out concurrently with the foregoing from January 1967 to December 1968, in order to gain a better insight into the sources of nutrients. All data except continuous tide and temperature records, collected from 1965 to the end of 1966, have been released in a data record.

It is planned for 1969 to analyze all available data for appropriate reporting. As opportunity affords, it is hoped to sample and analyze bottom sediments for additional information on the phosphate cycle in Portage Inlet.

→ SCIENTIST IN CHARGE: A. Waldichuk

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST

1969- 1970

PROJECT NAME Wind-Flushing of a Marine Embayment			
LOCATION(S) Departure Bay			
AGENCY Fisheries Research Board of Canada, Pacific Oceanographic Group			
PRINCIPAL COOPERATING AGENCIES Canadian Hydrographic Service (continuous tidal and current observations) Department of Transport, Meteorological Branch (Meteorological Observations)			
DATE:	FROM 1968	TO 1969	EFFORT (IN MAN YEARS) <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 80%;"> PROFESSIONAL SUPPORT SERVICES </div> <div style="width: 15%; text-align: right;"> ... 5:1 3:2 ... </div> </div>
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>Little quantitative data has been available on the contribution of winds to flushing moderately open embayments. Departure Bay was considered a suitable site because strong westerly winds blow seaward in summer along the major axis of the bay. Temperature can be used as a suitable index of mixing and turnover, because of the temperature stratification during mid summer.</p> <p>In 1968, a 6 week experiment was conducted from 1 July to 16 August. Surface and bottom temperatures were measured continuously at a number of locations. Currents were continuously recorded at 2, 5 and 20 m at a station in the middle of Departure Bay and near bottom at the oceanographic tower closer to shore. Wind speed and direction were recorded on islands at the middle of the bay and at its entrance. Daily observations were made with a BT and once-weekly with an <u>in situ</u> salinometer at 10 stations in the bay.</p> <p>It is planned to analyze the data during 1969 and to fill in any "gaps" with further experiments in summer.</p>			
<div style="text-align: right;"> → SCIENTIST IN CHARGE: <u>Dr. Waldman</u> </div>			
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969 - 1970

PROJECT NAME

Fish Distribution in the Ocean

LOCATION(S)

Eastern Subarctic Pacific and British Columbia Coastal Waters

AGENCY

Fisheries Research Board of Canada, Environmental Research Group

PRINCIPAL COOPERATING AGENCIES

United States Weather Bureau (Environmental Science Services Admin.)
Meteorological Service (Department of Transport)
Department of Fisheries, Pacific Region

DATE:

FROM

1965

TO

Indefinite

EFFORT (IN MAN YEARS)

PROFESSIONAL

SUPPORT SERVICES

1

.....

0.3

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SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Relationship of fish distribution and abundance to annual variations
in the Macro-environment

The purpose is to apply the results of basic studies to the prediction of annual variations in fish survival, migration and growth.

Advection of water masses has been shown to have an important influence on marine animal populations. Variations in mixing and insolation and associated with wind-driven transport. A monthly index of advection for the past 22 years is available using Dr. Fofonoff's method. Long-term, time-series analyses can be made in a manner not possible from cruise data. Sea-level variation in coastal waterways is associated with circulation changes and is another useful index.

In 1970, response surface analyses of herring and salmon population will be continued. A 2^o alternate grid of daily mass transport calculations in the coastal area will be available for comparison with coastal oceanographic cruise data.

W.P. Wickett

→ SCIENTIST IN CHARGE: -----

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST

1969 - 1970

PROJECT NAME		
Zoological oceanography - Plankton Samplers		
LOCATION(S)		
British Columbia coastal waters (applicable in any waters)		
AGENCY		
Institute of Oceanography, University of British Columbia		
PRINCIPAL COOPERATING AGENCIES		
National Electrolab Associates, Vancouver		
DATE:	FROM	TO
	1964	Continuing
EFFORT (IN MAN YEARS)		
PROFESSIONAL		...0.2....
SUPPORT SERVICES		...0.3....
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)		
<p>The opening-closing high-speed Catcher developed at IOUBC is now towed on a single conductor, armoured electric cable. The sampler can be opened and closed from the deck and its depth, the flow of water through it and temperature of the water monitored on deck. Additionally, the true depth of the towed body is recorded as a continuous trace on an echo-sounder record. The equipment can be used with a variety of samplers. Since echo-sounders are used to observe scatterers in the sea, the ability to follow the depth of a sampler on the sounder record enables sampling to be carried out in direct relationship to the observed scattering.</p>		
SCIENTIST IN CHARGE: ---B. McK. Bary-----		
THIS SPACE FOR CCO INDEXING		



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969⁷⁰

PROJECT NAME

Zoological Oceanography - Sonic Scattering by Marine Organisms

LOCATION(S)

Saanich Inlet and other coastal waters of British Columbia

AGENCY

Institute of Oceanography, University of British Columbia

PRINCIPAL COOPERATING AGENCIES

Fisheries Research Board, Nanaimo, B.C.
Defence Research Board, Underwater Weapons Establishment,
Vancouver Island, B.C.,
Defence Research Establishment Pacific, Esquimalt, B.C.

DATE:

FROM

1961

TO

Continuing

EFFORT (IN MAN YEARS)

PROFESSIONAL

...0.4...

SUPPORT SERVICES

...1.0...

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

One essential to understanding effects of organisms on underwater acoustics is a knowledge of which organisms are scatterers and over what range of frequencies particular sorts of organisms are effective. To this end scattering at 12, 50, and 100 and 200 kHz has been studied, initially qualitatively. These studies have shown that fish can be recorded at all frequencies but that at 100 kHz and above a second type of scattering becomes apparent. The evidence indicates this is caused probably by zooplanktonic crustaceans of a centimetre or larger. The qualitative studies will continue in attempts to clarify the role of fish and zooplankton and to study such aspects as the ecology and quantitative acoustic studies now in hand.

Quantitative studies, being carried out in the field and in the laboratory, concerned determining the volume reverberation in the zooplankton scattering and its daily and seasonal fluctuations. Attempts will be made to correlate volume scattering (and changes in it) with the abundance of scatterers and changes in faunal composition and/or distribution.

→ SCIENTIST IN CHARGE: B. McK. Bary

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST

1969-1970

[illegible]



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969 - 1970

PROJECT NAME

Comparison and Calibration of Instruments for Air/Sea Interaction

LOCATION(S)

Spanish Banks, Vancouver, British Columbia

AGENCY

Institute of Oceanography, University of British Columbia

PRINCIPAL COOPERATING AGENCIES

Groups in U.S.A., U.S.S.R., Germany, England and Canada

DATE:

FROM

1965

TO

Continuing

EFFORT (IN MAN YEARS)

PROFESSIONAL

...0.3....

SUPPORT SERVICES

...2.0....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Whenever possible measurements of the same quantity are made simultaneously by different instruments. Such comparisons lead to a deeper understanding of our instruments, and ultimately of the phenomena measured. Recently we have extended this intercomparison to include other groups than our own, and have conducted a joint intercomparison with a group from the Soviet Union and from the University of Washington. Such intercomparisons will be continued in the future.

R.W. Burling

R.W. Stewart and 3 graduate

→ SCIENTIST IN CHARGE: M. Miyake students

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST

1969 70

PROJECT NAME Geological Oceanography			
LOCATION(S) Continental slope and adjoining areas of the N.E. Pacific Ocean west of British Columbia			
AGENCY Institute of Oceanography, University of British Columbia			
PRINCIPAL COOPERATING AGENCIES Department of Geology, University of British Columbia			
DATE	FROM	TO	EFFORT (IN MAN YEARS)
	April, 1969	Continuing	<div style="display: flex; justify-content: space-between;"> <div> PROFESSIONAL SUPPORT SERVICES </div> <div style="text-align: right;"> ..1.0..... ..0.7..... </div> </div>
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>The area under study comprises parts of three lithospheric plates, which move horizontally relative to one another, producing crustal deformation and volcanism. (1) the Americas plate, whose western boundary is the continental slope (2) the Pacific plate, whose eastern boundary is the Queen Charlotte Islands fault and the median parts of Explorer and Juan de Fuca ridges, and (3) the Juan de Fuca plate, which lies between the other two plates. We study the interactions of plate movement and processes of marine sedimentation and their effects on submarine topography and upper crustal geology.</p> <p>Techniques used are continuous seismic reflection, echo-sounding, dredging, coring, bottom photography and magnetometry.</p> <p>In 1970 we hope to work aboard CSS Parizeau and/or CNAV Endeavour west of Vancouver Island and to cooperate with personnel of Atlantic Oceanographic Laboratory aboard CSS HUDSON in the area west of Queen Charlotte Islands and Queen Charlotte Sound.</p>			
—————→ SCIENTIST IN CHARGE: <u>B.L. Chase</u>			
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 -1970

PROJECT NAME

Chemical Oceanography - Trace Metal Studies

LOCATION(S)

British Columbia Coastal Waters

AGENCY

Institute of Oceanography, University of British Columbia

PRINCIPAL COOPERATING AGENCIES

DEMER, MSB (CSS Vector)

DRB (CHAV Laymore)

DATE:

FROM

1965

TO

Continued

EFFORT (IN MAN YEARS)

PROFESSIONAL

0.75

SUPPORT SERVICES

0.5

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S).)
(MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

The factors regulating the occurrence and composition of manganese nodules recovered in B.C. coastal areas are being studied. The distribution of manganese, iron and various other trace metals in the waters and sediments in the vicinity of the nodule deposits is being studied in an effort to determine how they migrate to the site of deposition. Some of the work already completed indicates that an intensive oxidative precipitation of manganese occurs at the interface between oxygenated and reducing waters. At the pH of these waters, rapid oxidative precipitation is not in apparent accord with the observed kinetics of the reaction between aqueous manganous ion and dissolved oxygen. Because of its possible relation to the formation of the manganese nodules, studies of the mechanism of this reaction are planned.

→ SCIENTIST IN CHARGE: E.J. Grill

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST 1969-1970

PROJECT NAME			
Internal Waves in the Strait of Georgia			
LOCATION(S)			
Strait of Georgia, north of Boundary Pass			
AGENCY			
Institute of Oceanography, University of British Columbia			
PRINCIPAL COOPERATING AGENCIES			
Defence Research Establishment Pacific			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1967	1970	<div style="display: flex; justify-content: space-between;"> <div>PROFESSIONAL</div> <div>0.2</div> </div> <div style="display: flex; justify-content: space-between;"> <div>SUPPORT SERVICES</div> <div>1.0</div> </div>
SUMMARY (PURPOSE THEORY PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<ul style="list-style-type: none"> - To study generation and propagation of internal gravity waves. - To test theory that waves observed to form in Boundary Pass and progress northward have characteristics of an internal undular bore. - Time series observations of variations of water density locally and aerial photographs of wave patterns. - Summer. (Fraser River freshet time) - Aboard ship and helicopter and/or aircraft. <p>* Ph.D. project for Miss. A.E. Gargett.</p>			
SCIENTIST IN CHARGE: <u>Paul H. LeBlond</u>			
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME

Variability in the N.E. Pacific

LOCATION(S)

Theoretical

AGENCY

Institute of Oceanography, University of British Columbia

PRINCIPAL COOPERATING AGENCIES

None

DATE:

FROM

1968

TO

1970

EFFORT (IN MAN YEARS)

PROFESSIONAL

0.2

SUPPORT SERVICES

1.0

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

To study the causes of yearly variations in current, temperature and salinity in the N.E. Pacific; more specifically, an attempt to correlate those fluctuations with the weather patterns so as to make predictions possible.

Ph. D. Project for R.E. Thomson

→ SCIENTIST IN CHARGE: Paul H. LeBlond

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST

1969 - 1970

PROJECT NAME An Ecological Study of Two Forms of the Genus Calanus (Crustacea: Copepoda)			
LOCATION(S) Laboratory Waters off the coast of British Columbia			
AGENCY Institute of Oceanography, University of British Columbia			
PRINCIPAL COOPERATING AGENCIES DEM&R, MSB (CSS Vector)			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1964	1970	PROFESSIONAL 0.25 SUPPORT SERVICES 1.0
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>Purpose: To study the relationship between 2 similar forms of the copepod genus <u>Calanus</u> whose geographical distributions overlap locally.</p> <p>The project is divided into three main parts. The first is a study of the morphology of both forms. The second concerns the overall distribution of the two forms and includes the determination of the extent of overlap of their geographic ranges. The third part is an investigation of the ecology of both forms. The latter is, for the most part, carried out in Indian Arm, an inlet near Vancouver. The ecological investigation involves the use of collections made at monthly intervals to show the spatial distribution and population structure throughout the year. The third part also includes the use of live animals for laboratory experiments to test the effect of different levels of salinity and temperature as well as different types of foods. Live animals will also be used in an attempt to determine whether or not the two forms can successfully interbreed and produce viable offspring.</p> <p>This study is being carried out by Mr. Charles Woodhouse.</p> <p style="text-align: right;">A.G. Lewis Associate Prof. of Oceanography</p> <p style="text-align: center;">→ SCIENTIST IN CHARGE:</p>			
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969 70

PROJECT NAME

Ecology of the life history stages of planktonic marine crustaceans

LOCATION(S)

Laboratory
Juan de Fuca Strait, Strait of Georgia, associated inlets.

AGENCY

Institute of Oceanography, University of British Columbia.

PRINCIPAL COOPERATING AGENCIES

DATE:

FROM

1964

TO

continuing

EFFORT (IN MAN YEARS)

PROFESSIONAL ... 1.0 ...

SUPPORT SERVICES ... 2.0 ...

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

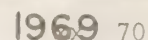
Purpose: To determine the requirements of the life history stages of planktonic marine crustaceans and relate these to the occurrences of the organism in the field.

Eggs and water are collected in the field and brought into the laboratory. The life history stages are maintained in either untreated or enriched water from the natural environment as well as other locations. The effect of the various nutrient agents used to enrich the water as well as the water from various localities is determined by comparing the overall survival and stage mortality with that from the unenriched water from the natural environment. The information obtained is then compared with natural occurrences of the stages in the field and hydrographic data from the various localities. Food is supplied to the feeding stages of the life cycle from laboratory cultures of phytoplankton and some members of the zooplankton.

Major vehicle: C.S.S. Vector.

→ SCIENTIST IN CHARGE: A.C. Lewis

THIS SPACE FOR CCO INDEXING



PROJECT NAME			
Physical Oceanography - Airborne Measurements of Air-Sea Interactions			
LOCATION(S)			
British Columbia Coastal Waters			
AGENCY			
Institute of Oceanography, University of British Columbia			
PRINCIPAL COOPERATING AGENCIES			
National Center for Atmospheric Research, Boulder, Colorado, U.S.A.			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1967	Indefinite	PROFESSIONAL .0.2..... SUPPORT SERVICES .0.5.....
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S)) (MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>To determine stress and heat and moisture flux at the air-sea interface at off shore location at high wind condition.</p> <p>The following measurement will be made from medium size two engine aircraft. (Beechcraft - Queen-Air).</p> <p>A: Vertical wind components by air borne sonic anemometer.</p> <p>B: High frequency lateral components of wind, and temperature by hot and cold wires, humidity fluctuation by Lyman-Alpha humidiometer.</p> <p>C: Motion of aircraft by Gyroscope and accelermometers.</p> <p>The estimate of flux will be made from (1) eddy correlation method; (2) spectral density in -5/3 power region; (3) dissipation integral.</p>			
M. Miyako R.W. Stewart SCIENTIST IN CHARGE: -----			
THIS SPACE FOR CCO INDEXING			

PROJECT FORECAST 1969 - 1970

PROJECT NAME		
Geological Oceanography - continuous seismic profiling		
LOCATION(S)		
Strait of Georgia, B.C. Continental Shelf of B.C. between Juan de Fuca Strait on the south and Dixon Entrance on the north		
AGENCY		
Institute of Oceanography, University of British Columbia		
PRINCIPAL COOPERATING AGENCIES		
Department of Geology, University of British Columbia Geologic Survey of Canada DRB (CNAV Endeavour)		
DATE:	FROM	TO
January 1966	Continuing	
		EFFORT (IN MAN YEARS)
		PROFESSIONAL 1.5 SUPPORT SERVICES 1.0
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S). MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)		
<p>The purpose of this project is to attempt to understand the origin, geologic history, and subsequent Quaternary modification of the Inland Waterway, continental shelf and slope off British Columbia. Essentially, it gives traditional geological oceanography studies the third dimension, time. Thus, the continuous seismic profiling project is closely co-ordinated with other sea bottom studies wherever possible. Continuous seismic profiling is just a variety of echo-sounding in which a signal is generated in the water by a high voltage discharge of electricity or explosion of a mixture of oxygen and propane. This outgoing signal is reflected from the sediment-water interface and all velocity discontinuities in the sediment and underlying bedrock. The reflected signal is picked up by hydrophones trailing in the water behind the ship and is then amplified and recorded on a PGR recorder.</p> <p>The results of the initial 600 miles of seismic survey completed in the Strait of Georgia are currently the subject of a Ph.D. thesis for D.J. Riffin at the Institute of Oceanography. Additional Seismic studies are planned in the Strait of Juan de Fuca and on the continental shelf west of Vancouver Island in 1970.</p>		
		J.W. Murray R.L. Chase
		→ SCIENTIST IN CHARGE: -----
THIS SPACE FOR CCO INDEXING		

PROJECT FORECAST

1969 - 1970

PROJECT NAME			
Geological Oceanography - British Columbia Straits and Inlets			
LOCATION(S)			
Howe Sound, B.C.		Queen Charlotte Sound, B.C.	
Jervis Inlet, B.C.		Barkely Sound, B.C.	
Wreck Bay, B.C.		Strait of Juan de Fuca	
AGENCY			
Institute of Oceanography, University of British Columbia			
PRINCIPAL COOPERATING AGENCIES			
Department of Geology, University of British Columbia Geologic Survey of Canada LEMR, MSB (CSS Vector)			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	October 1964	Continuing	PROFESSIONAL ...3.0... SUPPORT SERVICES ...1.0...
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S)) (MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>The purpose of this project is to obtain some understanding of the bottom topography, sediment distribution and sediment composition in the near-shore waters of British Columbia. This will ultimately lead to a better understanding of the sedimentological processes operating off B.C. Practically, all samples are collected from ships. The ship work consists of grab sampling, piston coring, dredging, bottom photography, bathymetric and continuous seismic profiling surveys. The majority of the work is done in the summer but cruises are made on occasion in the winter months. Ships used in these projects consist of the CNAV Endeavour and Laymore and the CSS Vector.</p> <p>The personnel work on the different areas on this project are as follows:</p> <p>Howe Sound, B.C. - J.W. Murray Jervis Inlet, B.C. - R.D. Macdonald (M.Sc. project) Wreck Bay, B.C. - A.J. Bremner (M.Sc. project) Queen Charlotte Sound, B.C. - J. Luternauer (Ph.D. project) Barkely Sound, B.C. - L. Carter (Ph.D. project)</p> <p>It is planned to use the U/W television equipment of CSS Vector for visual study of the ocean bottom.</p> <p style="text-align: right;">J.W. Murray</p> <p style="text-align: right;">→ SCIENTIST IN CHARGE: <u>J.W. Murray</u></p>			
THIS SPACE FOR CCO INDEXING			

PROJECT FORECAST 1969 - 1970

[illegible]

1969 70

PROJECT NAME			
Physical Oceanography - Inlet Studies			
LOCATION(S)			
Inlets along British Columbia Coast (N.E. Pacific) and in Southern Chile			
AGENCY			
Institute of Oceanography, University of British Columbia.			
PRINCIPAL COOPERATING AGENCIES			
None			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1951	Continuing	PROFESSIONAL .0.5..... SUPPORT SERVICES .1.0.....
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>Studies of mixing in the upper layers, particularly the influence of shear-flow-induced turbulence, wind mixing and topographic influences. Studies of long term variations of deep water properties and their causes.</p> <p>Survey of temperature/salinity/oxygen characteristics of typical inlets in southern Chile as Phase V of the Hudson 70 expedition.</p> <p>Work carried out from C.S.S. Vector; data published in Data Report by Institute of Oceanography, results of studies published in oceanographic journals.</p>			
			SCIENTIST IN CHARGE: R.L. Pickard
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969- 1970

PROJECT NAME

Botanical Oceanography - Benthonic Marine Algae

LOCATION(S)

Coastal British Columbia and Alaska

AGENCY

Institute of Oceanography, University of British Columbia

PRINCIPAL COOPERATING AGENCIES

Botany Department, University of British Columbia

DATE:

FROM

1969

TO

1972

EFFORT (IN MAN YEARS)

PROFESSIONAL

0.5

SUPPORT SERVICES

5

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

To study the distribution of marine algae in the North Pacific and investigate the effects of oceanographic conditions on different species; laboratory and field experimental approach and taxonomic studies are involved; future regions yet to be included are chiefly in the Aleutian Islands and the Bering Sea.

→ SCIENTIST IN CHARGE: R.F. Scagel

THIS SPACE FOR CCO INDEXING

CANADA

PROJECT FORECAST

1969 - 1970

PROJECT NAME			
Ocean Station "P" Buoy Project			
LOCATION(S)			
Ocean Station "P" (Lat. 50°N, Long. 145°W)			
AGENCY			
Institute of Oceanography, University of British Columbia			
PRINCIPAL COOPERATING AGENCIES			
POG DOT DEVEL Woods Hole Oc. Inst.			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1969	Continuing	PROFESSIONAL ...1..... SUPPORT SERVICES ...2.....
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S)) (MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>To station, at first, one and later several buoys, of the kind used by Pofonoff at WHOI, to measure oceanographic and meteorological parameters for the purpose of:</p> <ol style="list-style-type: none"> (1) Determining the space-time structure of fluctuation in the ocean with period in the range $\frac{1}{2}$ to 20 days. (2) Ascertaining the reliability of meteorological observations taken from small anchored buoys. 			
<div style="text-align: right;"> → SCIENTIST IN CHARGE: <u>R. W. Stewart</u> </div>			
THIS SPACE FOR CCO INDEXING			

PROJECT FORECAST

1969 - 1970

[illegible]

PROJECT FORECAST

1969 - 1970

PROJECT NAME			
Physical Oceanography - Wind generated waves			
LOCATION(S)			
Spanish Banks, Vancouver, British Columbia			
AGENCY			
Institute of Oceanography, University of British Columbia			
PRINCIPAL COOPERATING AGENCIES			
None			
DATE	FROM	TO	EFFORT (IN MAN YEARS)
	1965	Continuing	PROFESSIONAL ..0.5..... SUPPORT SERVICES ..3.5.....
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>To determine momentum and energy transfer processes between wind and wave:</p> <ul style="list-style-type: none"> A. by measuring the pressure at the surface of the wave, B. by measuring the pressure at one height above the wave, C. by determining the non-linearity and directional spectrum of waves, D. by determining the wind structure below the wave crest. 			
R.W. Stewart R.W. Burling and 3 graduate students → SCIENTIST IN CHARGE: M. Miyake			
THIS SPACE FOR CCO INDEXING			

PROJECT FORECAST

1969 - 1970

PROJECT NAME Physical Oceanography - Transfer across the Air/Sea Interface							
LOCATION(S) Spanish Banks, Vancouver, British Columbia							
AGENCY Institute of Oceanography, University of British Columbia							
PRINCIPAL COOPERATING AGENCIES None							
DATE:	FROM 1963	TO Continuing	EFFORT (IN MAN YEARS) <table style="width: 100%; border: none;"> <tr> <td style="text-align: right;">PROFESSIONAL</td> <td style="text-align: right;">.. 0.5</td> </tr> <tr> <td style="text-align: right;">SUPPORT SERVICES</td> <td style="text-align: right;">.. 3.5</td> </tr> </table>	PROFESSIONAL	.. 0.5	SUPPORT SERVICES	.. 3.5
PROFESSIONAL	.. 0.5						
SUPPORT SERVICES	.. 3.5						
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.) <div style="padding-left: 40px;"> <p>To determine turbulent fluxes above and across the interface and their dependence on wind velocity, stability, underlying wave field, etc.</p> <p>A: by measurements of wind components and Profiles.</p> <p>B: by measurements of Temperature.</p> <p>C: by measurements of Humidity.</p> </div>							
<div style="text-align: right; padding-right: 50px;"> R.W. Stewart R.W. Burling and 3 graduate → SCIENTIST IN CHARGE: --- M. Miyake --- students --- </div>							
THIS SPACE FOR CCO INDEXING							

CANADA

1969- 1970

PROJECT NAME Microbiological oceanography - Natural sea water discolourations						
LOCATION(S) British Columbia and Washington coastal waters						
AGENCY Institute of Oceanography, University of British Columbia						
PRINCIPAL COOPERATING AGENCIES Agencies in locality of occurrence.						
DATE: FROM 1965	TO continuing	EFFORT (IN MAN YEARS) <table style="width: 100%; border: none;"> <tr> <td style="text-align: right;">PROFESSIONAL</td> <td style="text-align: right;">0.1</td> </tr> <tr> <td style="text-align: right;">SUPPORT SERVICES</td> <td style="text-align: right;">.....</td> </tr> </table>	PROFESSIONAL	0.1	SUPPORT SERVICES
PROFESSIONAL	0.1					
SUPPORT SERVICES					
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.) <p>The purpose of this project is to study the occurrence of intense biological discolourations of sea water <u>when they occur</u>, so as to determine the organisms responsible (chiefly dinoflagellates in red water), the ecology of such occurrences, and the potential or realised harmful effects to marine fauna (mass mortality, fish mortality) or humans (shellfish toxicity).</p> <p>Participating agencies and collection depends on the locality of the occurrence (in Puget Sound - College of Fisheries, University of Washington). Vessels provided by CNAV and D.E.M.R. are occasionally employed for this purpose.</p> <p>This study also involves culture of the organisms in question for life-cycle and physiological studies.</p>						
F.J.R. Taylor —————→ SCIENTIST IN CHARGE: -----						
THIS SPACE FOR CCO INDEXING						



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969 - 1970

PROJECT NAME
Microbiological oceanography-taxonomy of N.E. Pacific phytoplankton

LOCATION(S)

Coastal waters of British Columbia, Alaska and the Bering Sea

AGENCY

Institute of Oceanography, University of British Columbia

PRINCIPAL COOPERATING AGENCIES

None

DATE:

FROM

TO

EFFORT (IN MAN YEARS)

1965

1970

PROFESSIONAL

0.2

SUPPORT SERVICES

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

In view of the serious inadequacy of knowledge on the floristic characteristics of the phytoplankton in the N.E. Pacific a critical taxonomic study of these organisms is essential to complement any ecological studies made in this area. Whilst chief emphasis is being placed on the diatoms and dinoflagellates, an attempt is being made to identify members of all phytoplankton groups and, in particular, those of apparent ecological importance. Parasites of the phytoplankton are also receiving special attention. Whilst unusual discoveries are being published in separate papers as they are made, it is hoped ultimately to produce guides to the identification of the N.E. Pacific phytoplankton, either in continuing fiche form as a manual.

Material used comes from collections made during cruises in conjunction with other studies by this Institute, such as the Vitamin B12 project and collection of macro-algae from the Aleutian Islands and Bering Sea. Vessels employed are those of D.E.M.R. and C.N.A.V. (Vector, Laymore, Endeavour).

→ SCIENTIST IN CHARGE: F.J.R. Taylor

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST

1969 - 1970

[illegible]



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1970

PROJECT NAME

Salmon Forecasting Service

LOCATION(S)

Juan de Fuca Strait
Strait of Georgia

AGENCY

International Pacific Salmon Fisheries Commission

PRINCIPAL COOPERATING AGENCIES

DATE: FROM

1950

TO

Continuing

EFFORT (IN MAN YEARS)

PROFESSIONAL

...2.....

SUPPORT SERVICES

...2.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Each year, the Commission provides to the fishing industry of Canada and the United States, a forecast of the sockeye and pink salmon (homing) runs to the Fraser River system.

The forecast is based on observations and study of spawning, escapement and survival of the seaward migrants and initial indications of the returning migrants from distant coastal fisheries.

→ SCIENTIST IN CHARGE: L.A. Royal

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST

1969 - 1970

PROJECT NAME		
Statistics of long time-series of geophysical data		
LOCATION(S)		
Biological Station, Nanaimo, B.C.		
AGENCY		
DEM&R, MSB, Pacific Oceanographic Group		
PRINCIPAL COOPERATING AGENCIES		
Fisheries Research Board of Canada, Pacific Oceanographic Group Computing Centre, University of Victoria		
DATE:	FROM	TO
	1968	Indefinite
		EFFORT (IN MAN YEARS)
		PROFESSIONAL 0.2 SUPPORT SERVICES 0.3
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)		
<p>The purpose of this project is to estimate second, third, and fourth-order statistics for long time-series of geophysical data, e.g. coastal sea water, sea level, Station P hydrographic data, etc. Our primary interest is in low frequencies (less than 0.5 cpd.) and a portion of the effort involves understanding the characteristics of low-pass numerical tapers. Relationships between statistics of different time series are also to be studied.</p> <p>It should be emphasized that this project at the present time involves mainly an examination of the statistics and estimation procedures with a computer from various mathematical points of view. Hence, it is not expected to yield publications immediately.</p>		
		C.A. Collins
		→ SCIENTIST IN CHARGE: _____
THIS SPACE FOR CCO INDEXING		



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie DU CANADA

PROJECT FORECAST

1969 - 1970

PROJECT NAME			Oceanographic Monitor - Northeast Pacific Ocean		
LOCATION(S)			Station P (50N, 145W), along 50N between 125 and 165°W, along 150°W		
AGENCY			Marine Sciences Branch, DEMR, Pacific Oceanographic Group		
PRINCIPAL COOPERATING AGENCIES			FRB, DOT (Marine Services, Canadian Coast Guard), Bedford Institute, IOUBC		
DATE:	FROM	TO	EFFORT (IN MAN YEARS)		
	1956	Indefinite	PROFESSIONAL	...	2.....
			SUPPORT SERVICES	...	4.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

During 1969 the CCGS Quadra joined the CCGS Vancouver in taking oceanographic observations, eliminating the six week gap in the data records. In 1970, the CCGS Quadra will be manned for a winter and summer patrol to obtain data from Station P. Observations will be made from the CSS Hudson along 150W in 1970 and from another vessel along 50N. Moored and free fall buoy work will be continued at Station P.

Data collected in previous years are being studies. Geochemical studies are being initiated.

D.A. Healey, C.A. Collins,

C.S. Wong

→ SCIENTIST IN CHARGE: -----

THIS SPACE FOR CCO INDEXING



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME Tides and Water Levels			
LOCATION(S) Pacific Coast			
AGENCY DEM&R, MSB, Oceanographic Research, Tides and Water Levels, Ottawa			
PRINCIPAL COOPERATING AGENCIES University of British Columbia International Coordinating Group Tsunami Warning System			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1967	Indefinite	PROFESSIONAL . . . 1 SUPPORT SERVICES . . . 1
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, REASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>Announcing tide gauges form an integral part for the Tsunami warning service within the Pacific Ocean. Canada has developed a certain type of gauge which has been installed at Fortin and Victoria and can be interrogated by telephone directly from the coast guard. Several additional gauge sites have been selected to install similar equipment in the near future and new developments have to be incorporated to meet the demands of the International Coordinating Group on Tsunami. The gauges presently installed give the instantaneous water height, falling or rising tendency and height of previous high or low water. The equipment can detect unusual changes in water level and will call a pre-set telephone number as well as storing height information over a certain period of time for later interpretation. In addition, on detecting an unusual change of water level, data at one-minute interval over a period of several hours can be collected. The information is put on a computer terminal and can be used for transmission via telex to interested agencies.</p>			
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969- 1970

PROJECT NAME

WeatherShip Program - Ocean Wave Recording

LOCATION(S)

Ocean weather station 'P' North Pacific Ocean

AGENCY

DMR, MNR, Oceanographic Research, Ottawa, Ontario.
DMR, MNR, Pacific Oceanographic Group

PRINCIPAL COOPERATING AGENCIES

Pacific Oceanographic Group
D.O.T.
D.R.E.P.

DATE:

FROM

1969

TO

Indefinite

EFFORT (IN MAN YEARS)

PROFESSIONAL

1/2

.....

SUPPORT SERVICES

1/2

.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

The weathership vessels "Quadra" and "Vancouver" are equipped with the N.I.O. Shipborne Wave Recorders. Ocean waves are recorded and analysed at Ocean Weather Station 'P' by sampling for a 10 minute interval every 3 hours. Ultimately, it is proposed to incorporate this wave information into the present weathership data output to provide a continuous record for maritime and research purposes.

—————→ SCIENTIST IN CHARGE: G.L. Holland

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST

1969-1970

PROJECT NAME			Tsunami in Alberni Inlet
LOCATION(S)			Alberni Inlet, British Columbia
AGENCY			DEM&R, MSB, Oceanographic Research Division, Ottawa
PRINCIPAL COOPERATING AGENCIES			The measurements of the Tsunami and other relevant information has been obtained from a technical report.
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	January	December	PROFESSIONAL 1 Scientist SUPPORT SERVICES 1 programmer
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>The purpose of this project is to calculate numerically the Tsunami in the Alberni Inlet caused by the Alaska earthquake on March 28, 1964. The Tsunami caused by this earthquake travelled southward along the B.C. Coast and into the inlets and rivers. The maximum damage occurred at the head of the Alberni Inlet.</p> <p>The study will be made in three parts:</p> <ol style="list-style-type: none">1. The frequencies of the natural oscillations of the Trevor Channel and/or the Alberni Inlet will be calculated and the amplification factor will be determined.2. The structure of the oscillation in the Trevor Channel and/or the Alberni Inlet will be computed for several probable values of periods and amplitudes of the incident wave at the mouth of the Trevor Channel.3. An initial value (time-dependent) calculation with several prescribed amplitudes at the mouth of the Trevor Channel.			
SCIENTIST IN CHARGE:			J. S. Murphy
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969 - 1970

PROJECT NAME

Tsunami Studies in Canada

LOCATION(S)

The west coast of Canada

AGENCY

EMR, MSB, Oceanographic Research, Ottawa

PRINCIPAL COOPERATING AGENCIES

The data was obtained for Mr. G.C. Dohler and Mr. S.O. Wigen
of the Marine Sciences Branch

DATE:

FROM

January

TO

December

EFFORT (IN MAN YEARS)

PROFESSIONAL

2 Scientists

SUPPORT SERVICES

1 Programmer

.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

The purpose of this project is to calculate the propagation of
tsunamis across the Pacific Ocean into the inlets of the west coast
of Canada and to understand the related dynamical process. Specific-
ally the following calculations will be made:

1. propagation of tsunami for epicenter of earthquakes in the
Aleutian Islands
2. ampications of the tsunami in Alberni Inlet, Rivers Inlet
Shields Bay and Littuya Bay
3. Power spectra for past tsunamis in Canada.

→ SCIENTIST IN CHARGE: T.S. Murty and Lise Boilard

THIS SPACE FOR CCO INDEXING



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITE D'OCEANOGRAPHIE DU CANADA

PROJECT FORECAST 1969-1977

PROJECT NAME Marine Algal Distributions as Related to Physical Parameters			
LOCATION(S) Northeast Pacific shore from AKU, Alaska to the Columbia River, Oregon Laboratory			
AGENCY Department of Biological Sciences, Simon Fraser University			
PRINCIPAL COOPERATING AGENCIES			
DATE: 1965	FROM Indefinite	TO Indefinite	EFFORT (IN MAN YEARS) PROFESSIONAL 1 SUPPORT SERVICES 3
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S)) (MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p><u>Objectives:</u> A definitive study of the role of environmental factors in determining distributions of marine benthic plants. This involves understanding dispersal mechanisms, distribution patterns, the environment and interaction between the plants and the environment.</p> <p><u>Present Research:</u></p> <ol style="list-style-type: none"> (1) Continued development of instrumentation for monitoring inshore oceanographic conditions. (2) Continued studies on algal spore response to environmental conditions. (3) Continued cataloguing of northeast Pacific distributions of the brown algal order, Laminariales, and establishment of correlates between these distributions and environmental conditions. <p><u>Major Facilities:</u></p> <p>Several large culture tanks and controlled environmental chambers for studying algal response to defined environmental conditions. Scuba facilities for submarine research.</p>			
		SCIENTIST IN CHARGE <u>L.D. Huehl</u>	
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1970

PROJECT NAME

Energy Flow in Aquatic Ecosystems.

LOCATION(S)

Marine and freshwaters adjacent to Vancouver, B. C.

AGENCY

Dept. of Biological Sciences, Simon Fraser University.

PRINCIPAL COOPERATING AGENCIES

N. R. C. grant

F. R. B. grant

DATE:

FROM

1967

TO

Indefinite

EFFORT (IN MAN YEARS)

PROFESSIONAL

.....1.....

SUPPORT SERVICES

...4....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

The following projects are underway and are aimed at assessing various aspects of the physiology and ecology of the plankton and nekton.

- 1) Effect of light on the nature of algal photosynthate.
- 2) The relationship between rate of algal excretion of dissolved organic compounds and nature of the algal photosynthate.
- 3) The extent of diel and seasonal rhythms in feedings, respiration and excretion in planktonic copepods. An analysis of the effect of light, quality and quantity, and temperature on rhythms.
- 4) The effect of diel temperature fluctuations on growth and the efficiency of assimilation in young sockeye salmon.

→ SCIENTIST IN CHARGE: *Walter H. Green*

THIS SPACE FOR CCO INDEXING

WORLD OCEANS



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969 - 1970

PROJECT NAME																	
Micropaleontology																	
LOCATION(S)																	
Arctic Continental Shelf, Hudson Bay, Atlantic Provinces and adjacent areas of the Atlantic Ocean.																	
AGENCY																	
DEMAR, MSB, Atlantic Oceanographic Laboratory, Bedford Inst.																	
PRINCIPAL COOPERATING AGENCIES																	
Marine Geology Section, Queen's University; Carleton University																	
DATE:	FROM	TO	EFFORT (IN MAN YEARS)														
	1969	Indefinite	PROFESSIONAL 4 SUPPORT SERVICES 3														
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)																	
<p>Micropaleontology is studied to assist in the interpretation of ancient oceanic environments. The modern environment and its effect on living organisms is also studied with a view to illuminating problems of speciation, morphology, evolutionary trends, migration, zoning, taxonomy and the dating of geological and oceanographic events.</p> <p>Detailed conventional and statistical studies of foraminifera life cycles, distribution, abundance, and test morphology are being conducted in the field and in the laboratory.</p> <p>Ice platforms, sampes, and small craft are used in the field sampling operations. Special sediment traps and dredges, <u>in situ</u> recorders, and portable chemical kits form part of the field equipment. Most work is done between April and November but certain stations are monitored bi-monthly throughout the year.</p> <table border="0"> <tr> <td>Arctic Project</td> <td>- G. Vilks</td> </tr> <tr> <td>Hudson Bay Project; Arctic</td> <td>- F.J.E. Wagner</td> </tr> <tr> <td>Gulf of St. Lawrence; Atlantic Provinces</td> <td>- C.T. Schafer</td> </tr> <tr> <td>Atlantic Provinces</td> <td>- G.A. Bartlett</td> </tr> <tr> <td>West Indies & Bermuda (1969)</td> <td>- C.T. Schafer, G.A. Bartlett,</td> </tr> <tr> <td></td> <td>F.J.E. Wagner, G. Vilks, B.K. Sen Gupta</td> </tr> <tr> <td>Mid-Atlantic Ridge Project</td> <td>- G.A. Bartlett & G. Vilks</td> </tr> </table>				Arctic Project	- G. Vilks	Hudson Bay Project; Arctic	- F.J.E. Wagner	Gulf of St. Lawrence; Atlantic Provinces	- C.T. Schafer	Atlantic Provinces	- G.A. Bartlett	West Indies & Bermuda (1969)	- C.T. Schafer, G.A. Bartlett,		F.J.E. Wagner, G. Vilks, B.K. Sen Gupta	Mid-Atlantic Ridge Project	- G.A. Bartlett & G. Vilks
Arctic Project	- G. Vilks																
Hudson Bay Project; Arctic	- F.J.E. Wagner																
Gulf of St. Lawrence; Atlantic Provinces	- C.T. Schafer																
Atlantic Provinces	- G.A. Bartlett																
West Indies & Bermuda (1969)	- C.T. Schafer, G.A. Bartlett,																
	F.J.E. Wagner, G. Vilks, B.K. Sen Gupta																
Mid-Atlantic Ridge Project	- G.A. Bartlett & G. Vilks																
SCIENTIST IN CHARGE. G. Vilks																	

THIS SPACE FOR CCO INDEXING



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME

Zoological Oceanography - zooplankton distribution (Calanus)

LOCATION(S)

World Oceans

AGENCY

Institute of Oceanography, University of British Columbia

PRINCIPAL COOPERATING AGENCIES

various of the principal marine laboratories and museums of the world (Belgium, Denmark, Russia, Australia, New Zealand, U.S.A. and Canada)

DATE:

FROM

TO

EFFORT (IN MAN YEARS)

1959

1970

PROFESSIONAL

0.1

SUPPORT SERVICES

0.9

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

The copepod Calanus is a principal food of some fish and whales in those areas in which it occurs. It is also extensively used experimentally. There is much confusion taxonomically within the genus so that data from different regions and probably different "forms" are difficult to evaluate and compare. Initially the study is attempting to diagnose "forms" and provide a means for readily identifying these. Lines of speciation within the genus may then be determined. Distribution of each "form" is being determined. It appears that patterns of distribution and progressive stages in speciation may be interrelated with broad-scale movements in the ocean.

→ SCIENTIST IN CHARGE: B. McK. Bary

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST

1969 - 1970

PROJECT NAME Microbiological Oceanography-Dinoflagellates from the Indian Ocean			
LOCATION(S) Northern and Western Indian Ocean			
AGENCY Institute of Oceanography, University of British Columbia			
PRINCIPAL COOPERATING AGENCIES Oceanographic Sorting Center, Smithsonian Institution (Wash., D.C.)			
DATE:	FROM 1966	TO 1970	EFFORT (IN MAN YEARS) <div style="display: flex; justify-content: space-between;"> <div> PROFESSIONAL SUPPORT SERVICES </div> <div style="text-align: right;"> 0.3 0.7 </div> </div>
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>The purpose is to identify and describe in full taxonomic detail all thecate dinoflagellates present in the phytoplankton material collected by the R.V. "Anton Bruun" in the northern and western Indian Ocean during 1963-64. This consists of over 300 samples, being the largest collection of such material made in that area. As such it should provide, when analysis is completed, the most detailed and comprehensive account of these organisms occurring in the Indian Ocean that has been produced. The collection covers all seasons.</p> <p>All material relevant to this particular study has already been collected.</p>			
F.J.R. Taylor —————> SCIENTIST IN CHARGE: -----			
THIS SPACE FOR CCO INDEXING			

PROJECT FORECAST

1969 - 1970

PROJECT NAME			
Tides and Water Levels			
LOCATION(S)			
Atlantic, Pacific and Arctic Coasts Great Lakes, St. Lawrence River Drainage Basin			
AGENCY			
DEM&R, MSB, Oceanographic Research, Tides and Water Levels, Ottawa			
PRINCIPAL COOPERATING AGENCIES			
Surveys and Mapping Branch Inland Waters Branch Marine Services, Department of Transport			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1900	Indefinite	<div style="display: flex; justify-content: space-between;"> <div>PROFESSIONAL</div> <div>....3....</div> </div> <div style="display: flex; justify-content: space-between;"> <div>SUPPORT SERVICES</div> <div>...23....</div> </div>
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>Continuous measurements are made of tide and water levels on all coasts of Canada in the navigable waters of the Great Lakes - St. Lawrence System, to supply data for daily water management for marine and power installations and short or long term engineering and research projects. To ensure accuracy of recording, the gauge zeros are checked annually by precise three wire levelling from an established controlling bench mark. The gauges used are either float or pressure operated and levels are recorded on analogue charts, punched paper tape, or transmitted by telemetry via radio or land line to remote recorders. Analogue charts are scaled by semi-automatic or automatic devices and hourly heights, monthly instantaneous extremes and high and low tide levels are stored on punched cards or punched paper tape. Various computer programs check, plot and list the hourly heights and high and low tide levels, compute and list daily, monthly and yearly means, summarize and list annual and all time extreme levels and analyse the frequency distribution of Daily Mean Levels and high and low tide levels. Recorded levels are made available to the public instantaneously by automatic tele-announcing gauges or remote recording gauges and are published weekly, monthly and annually. Tidal heights are analyzed on a yearly or monthly basis and the most recent constituents obtained utilized to prepare tidal predictions annually for forty-four Canadian ports.</p>			
<div style="text-align: right;"> SCIENTIST IN CHARGE: <u>G.C. Dohler</u> </div>			
THIS SPACE FOR CCO INDEXING			

CANADA

1969 - 1970

PROJECT NAME		
Wave Climate Study		
LOCATION(S)		
Canadian Coastal and Inland Waters		
AGENCY		
DEM&R, MSB, Oceanographic Research Division, Ottawa		
PRINCIPAL COOPERATING AGENCIES		
DPW DOT NRC Harbour Development Board		
DATE:	FROM	TO
	1968	1973
EFFORT (IN MAN YEARS)		
PROFESSIONAL		1 1/2
SUPPORT SERVICES		
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S))		
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.		
<p>The Marine Sciences Branch is cooperating in full with the participating departments engaged on the Wave Climate Study. The Dept. of Public Works which initiated the study requires information and a capability to provide adequate knowledge of wave conditions for the use of engineers engaged in the design and construction of marine works. The Marine Sciences Branch also wishes to extend its own oceanographic data facilities to include pertinent wave data from Canadian and adjacent waters for research and general use.</p>		
SCIENTIST IN CHARGE: G.L. Holland		
THIS SPACE FOR CCO INDEXING		



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME

Tides and Water Levels

LOCATION(S)

Atlantic, Pacific and Arctic Coasts, Great Lakes and St. Lawrence River Drainage Basin

AGENCY

DEM&R, MSB, Oceanographic Research, Tides & Water Levels, Ottawa

PRINCIPAL COOPERATING AGENCIES

Inland Waters Branch

DATE:

FROM

1968

TO

1970

EFFORT (IN MAN YEARS)

PROFESSIONAL

1

.....

SUPPORT SERVICES

2

.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

To complete publication of a series of seven volumes entitled, "Tide and Water Level Bench Marks" which will provide users with a comprehensive list of bench marks referred to the datum of Canadian Hydrographic Service charts. These bench marks are located along the coasts or on the shores of the lakes and rivers covered by these charts. The series will also provide an essential base for relating recorded lake levels to the International Great Lakes Datum (1955), or where appropriate to Geodetic Survey of Canada Datum. Amendments, containing revisions and new data, will be published as required.

Six of these volumes have the same geographical boundaries as the six volumes of the Canadian Tide and Current Tables. The boundaries of the seventh volume include the Canadian shores of the Great Lakes and the non-tidal portion of the St. Lawrence River.

The year of establishment is given with the number or name of the bench mark. The height difference between Chart Datum and the bench mark is then tabulated, along with the original elevation of the bench mark referred to the Geodetic Survey of Canada Datum or the International Great Lakes Datum (1955). Thereafter, a description is given of each bench mark and its exact location. A sketch showing the salient features of the area and indicating the location of each bench mark completes the published information for each place.

→ SCIENTIST IN CHARGE: R.J.D. Mackenzie

THIS SPACE FOR CCO INDEXING

CANADIAN

1969-197

PROJECT NAME Precious Metals in Deep Sea Pelagic Sediments			
LOCATION(S) Pacific and Atlantic Oceans			
AGENCY McMaster University			
PRINCIPAL COOPERATING AGENCIES Florida State University			
DATE:	FROM 1968	TO 1970	EFFORT (IN MAN YEARS) PROFESSIONAL ... ² SUPPORT SERVICES
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, REASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>Pelagic sediments whose accumulation rates have been determined by radioactive disequilibrium methods will be analyzed by neutron activation analysis for precious metals including Pt, Au, Ir and Os. The data are expected to provide information on the relative significance of crustal weathering, submarine volcanic activity and extraterrestrial accretion as precious metal contributors to marine pelagic sediments.</p>			
→ SCIENTIST IN CHARGE: <u>J.H. Crocket</u>			
THIS SPACE FOR CCO INDEXING			

CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1970



PROJECT NAME

Precious Metal Geochemistry in the Marine Environment

LOCATION(S)

Atlantic and Pacific Oceans

AGENCY

McMaster University

PRINCIPAL COOPERATING AGENCIES

DATE:

FROM

TO

EFFORT (IN MAN YEARS)

1966

1968

PROFESSIONAL

..2.....

SUPPORT SERVICES

.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

The precious metals, Pd, Ir and Au, were determined in deep sea manganese nodules from the Atlantic and Pacific oceans by Neutron activation analysis. The concentration levels and abundance patterns of these metals suggest that much of their precious metal content, and in particular, their Ir count, must be of meteoritic or extra-terrestrial origin. On the basis of Ir, a mass accretion rate of extraterrestrial material to the earth of $4 \times 10^{-3} \text{ mg/cm}^2/10^3$ years (60 tons/day) was computed. This work is described in the following publications:

Palladium, iridium and gold in deep-sea manganese nodules.
Geochim. Cosmochim. Acta, 32: No. 10, 1968.

SCIENTIST IN CHARGE: J.H. Crockett

THIS SPACE FOR CCO INDEXING



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1970

PROJECT NAME			Chemistry and Benthos, San Francisco Bay		
LOCATION(S)			San Francisco Bay		
PRINCIPAL COORDINATING AGENCY			McMaster University, Department of Geology		
PRINCIPAL COOPERATING AGENCY			U.S. Geological Survey Office of Marine Geology and Hydrology Menlo Park, Calif.		
1969	1970	EFFORT IN MAN YEARS			
1969	1970	PROFESSIONAL		..2.....	
		SUPPORT SERVICES		..2.....	
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)					
<p>An initial chemical-biological survey of S.F. Bay has been completed to identify specific study areas. (1) All major cations and anions were analyzed to determine Bay water composition, (2) nutrient ions (three nitrogens, orthophosphate, dissolved oxygen, dissolved organic carbon silica) have been analyzed. Sediment analysis included size and organic and inorganic carbon. A rather complete benthos study is included.</p> <p>Data are summarized by reference to equilibrium with respect to common minerals and by definition of factor variables by factor analysis. In addition, a more complete three-year study is analyzed by factor analysis.</p>					
SCIENTIST IN CHARGE. <u>J.H. Hargrave</u>					
THIS SPACE FOR CCG INDEXING					



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1970

PROJECT NAME				Calcite-Aragonite Transition			
LOCATION(S)				Laboratory			
AGENCY				McMaster University, Department of Geology			
PRINCIPAL COOPERATING AGENCIES							
DATE	FROM	TO	EFFORT (IN MAN YEARS)				
	1968	1969	PROFESSIONAL	.....	1	.....
			SUPPORT SERVICES	.....	1	.....
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)							
<p>Precipitation studies of CaCO_3 are being examined with respect to formation of aragonite or calcite. Variables considered are various soluble organic compounds found in calcareous organisms, temperature and $\text{Mg}^{+2}/\text{Ca}^{+2}$ concentrations. A thermodynamic model involving ligand formation is the guide used in defining experiments. This is a continuation of Kitano's work. Thesis publication (B.Sc.) by W.N. Houston, McMaster University.</p>							
<p>—————→ SCIENTIST IN CHARGE, <u>J.A. Kramer</u></p>							
THIS SPACE FOR CCO INDEXING							

PROJECT FORECAST

1969-70

[illegible]



PROJECT FORECAST

1969 - 1970

PROJECT NAME			
Satellite Surveillance Program			
LOCATION(S)			
All marine and lakes area			
AGENCY			
DOT Satellite Data Laboratory			
PRINCIPAL COOPERATING AGENCIES			
Meteorological Branch DOT			
Many Federal and academic agencies and departments			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1963	1970 (Continuing)	PROFESSIONAL 7
			SUPPORT SERVICES 14
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>The Automatic Picture Transmission ground receiving station at Toronto continues to receive daily satellite photos of North America and its adjacent coastal waters from polar orbiting weather satellites. In addition test transmissions are received from two geostationary spacecraft over the equator at 151° West and 47° West which relay ocean coverage, weather charts and other data direct to the Toronto station for evaluation.</p> <p>Study projects related to the utilization of satellite data continue. Routine use for forecast hydrometeorological and ice reconnaissance applications is made of the TOS outputs. Plans for Meteorological Branch ground stations have been made and the implementation of a satellite data distribution network.</p> <p>Studies related to air pollution, surface temperature determination, cloud heights etc. from TOS spacecraft and the experimental NIMBUS III visual and IR outputs is in progress. Evaluation of satellite data and its potential uses in co-operation with the Branch, and other agencies continues.</p>			
SCIENTIST IN CHARGE:			C.I. Taggart
THIS SPACE FOR CCO INDEXING			

EXPERIMENTAL, MODELLING AND THEORETICAL STUDIES

1969 - 1970

PROJECT NAME		Physical Chemistry of Sea Water	
LOCATION(S)		Bedford Institute	
AGENCY		DEMER, MSB, Atlantic Oceanographic Laboratory, B.I.	
PRINCIPAL COOPERATING AGENCIES		Joint A.O.L., M.E.L., FRB operation	
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1969	1974	PROFESSIONAL SUPPORT SERVICES
			1 1/2
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S)) (MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
A study of physical chemical properties of sea water at high pressure. Studies of several parameters will be made up to pressures of 50 kilobars.			
SCIENTIST IN CHARGE: E. J. J. J.			
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME

Studies of Internal Wave Motions in the Ocean

LOCATION(S)

AGENCY

DEM&R, MSB, Atlantic Oceanographic Laboratory, B.I.

PRINCIPAL COOPERATING AGENCIES

Fisheries Research Board of Canada

DATE:

FROM

TO

EFFORT (IN MAN YEARS)

1967

continuing

PROFESSIONAL

1
.....

SUPPORT SERVICES

1
.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Two tanks have been constructed to allow studies of internal waves in model experiments. Experiments are expected to commence in 1970. Work is proceeding on a ray theory approach to internal wave phenomena.

A study has been made of measurement of Internal Wave phenomena using bottom mounted current meters.

→ SCIENTIST IN CHARGE: H. Sandstrom

THIS SPACE FOR CCO INDEXING



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969 - 1970

[illegible]



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969 - 1970

PROJECT NAME

Internal and Surface Waves in Rotating Systems.

LOCATION(S)

Theoretical

AGENCY

Institute of Oceanography, University of British Columbia

PRINCIPAL COOPERATING AGENCIES

Bedford Institute
(G.T. Needler)

DATE:

FROM

1967

TO

Continuing

EFFORT (IN MAN YEARS)

PROFESSIONAL

...0.2...

SUPPORT SERVICES

...1.0...

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S).
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

To study properties of finite amplitude surface and internal waves,
the associated transport and interaction phenomena.

Also -- Study of the complete linearized wave equation in a stratified
rotating fluid shell estimate the influence of the "chemical"
approximations often used in Rossby wave Theory.

With G.T. Needler.

→ SCIENTIST IN CHARGE: Paul H. LeBlond

THIS SPACE FOR CCO INDEXING



1969 - 1970

PROJECT NAME Rossby Waves over Bottom Topography			
LOCATION(S) Theoretical			
AGENCY Institute of Oceanography, University of British Columbia			
PRINCIPAL COOPERATING AGENCIES None			
DATE:	FROM 1967	TO 1970	EFFORT (IN MAN YEARS) <div style="display: flex; justify-content: space-between;"> PROFESSIONAL 0.2 </div> <div style="display: flex; justify-content: space-between;"> SUPPORT SERVICES 1.0 </div>
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.) <div style="padding: 10px;"> <p>To study large amplitude Rossby waves in bounded channels of variable bottom topography. The technique used is also applicable to the study of large amplitude internal waves.</p> <p>* Ph. D. project for Mr. R.A. Clarke</p> </div>			
<div style="text-align: right; margin-bottom: 10px;"> _____→ SCIENTIST IN CHARGE: Paul H. LeBlond </div>			
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969 - 1970

[illegible]

PROJECT FORECAST 1969 - 1970

PROJECT NAME			Temperature Fluctuations Near the Ocean Floor		
LOCATION(S)			Theoretical		
AGENCY			University of British Columbia, Institute of Oceanography		
PRINCIPAL COOPERATING AGENCIES			UBC Department of Mathematics		
DATE:	FROM	TO	EFFORT (IN MAN YEARS)		
	1961	1969	PROFESSIONAL	...0.5...	
			SUPPORT SERVICES	.....
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S)) (MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)					
<p style="margin: 0;">To apply similarity methods to find solutions of generalized heat equations which describe temperature fluctuations near the ocean bottom due to various types of tidal oscillations.</p>					
<div style="text-align: right;"> → SCIENTIST IN CHARGE: <u>Dr. J. S. Allen</u> </div>					
THIS SPACE FOR CCO INDEXING					

PROJECT FORECAST

1969 - 1970

[illegible]

PROJECT FORECAST

1969 - 1970

PROJECT NAME					
The Evaluation of Tidal Prediction Methods					
LOCATION(S)					
Canadian Coastlines and Rivers					
AGENCY					
DEM&R, MSB, Oceanographic Research, Tides and Water Levels, Ottawa					
PRINCIPAL COOPERATING AGENCIES					
DATE:		FROM		TO	
		January 1969		February 1970	
				EFFORT (IN MAN YEARS)	
				PROFESSIONAL	
				SUPPORT SERVICES	
				1/4 1/4	
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)					
The tidal predicitions at several stations along Canadian coastlines and the St. Lawrence River are computed by different methods.					
1. By using standard constituents,					
2. By using appropriate constituents identified from the spectra of the water level variations,					
3. By shallow water tidal predictions,					
4. By applying curve fitting technique between the high and low water.					
5. By establishing a model to predict the highs and lows at one station from those at another station.					
The results from these predictions will be evaluated according to their accuracy and simplicity in operation.					
SCIENTIST IN CHARGE: D.F. RO					
THIS SPACE FOR CCO INDEXING					



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME

Co-Tidal Chart Computation and Plotting

LOCATION(S)

Canadian Tidal Waters

AGENCY

DEM&R, MSB, Oceanographic Research, Tides and Water Levels, Ottawa

PRINCIPAL COOPERATING AGENCIES

DATE:

FROM

February 1970

TO

April 1971

EFFORT (IN MAN YEARS)

PROFESSIONAL

1/2

SUPPORT SERVICES

.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

To establish a two-dimensional numerical model to compute and plot the co-tidal chart of any area. Boundary conditions will be introduced where data are available. Along the coastlines, the published information of the co-tidal on a large scale model will be used as boundary conditions.

These co-tidal charts are very important to the hydrographic survey and other activities.

—————> SCIENTIST IN CHARGE: L.F. Ku

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST

1969 - 1970

[illegible]



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME

Chandler period in Geophysical parameters

LOCATION(S)

Canadian data as far as possible

AGENCY

EMR, MSB, Oceanographic Research, Ottawa

PRINCIPAL COOPERATING AGENCIES

The data is obtained from Marine Sciences Branch and Observatory Branch of EMR, Met. Branch of the Dept. of Transport and Prof. Melchior of Belgium.

DATE:

FROM

January

TO

December

EFFORT (IN MAN YEARS)

PROFESSIONAL

2 Scientists.

SUPPORT SERVICES

1 Programmer

.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

The purpose of this project is to detect and isolate the effect of Chandler period due to the free oscillations of the earth's instantaneous axis of rotation on the ocean tides (in this context it is known as pole tide). Attempts will be made to correlate this with other geophysical parameters such as astronomical data, gravity data and meteorological data.

→ SCIENTIST IN CHARGE: T.S. Murty and G.L. Holland

THIS SPACE FOR CCO INDEXING



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969 - 1970

[illegible]



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME

Tides and Storm Surges in Lakes, Estuaries and Embayments.

LOCATION(S)

AGENCY

DEMAR, Marine Sciences Branch, Ottawa.

PRINCIPAL COOPERATING AGENCIES

DATE

FROM

TO

EFFORT (IN MAN YEARS)

1968

Indefinite

PROFESSIONAL

...1.0....

SUPPORT SERVICES

...5....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

The purpose here is to develop a capability in the construction of mathematical models to solve real problems in tidal and estuarine hydrodynamics. These techniques have already been used to study the tides in the Bay of Fundy and the St. Lawrence estuary, and also in the study of large scale wind-induced motions in a two-layer rectangular basin. These studies are being extended to include the hindcasting of storm surges possibly in Lake Ontario, the Bay of Fundy, and other Canadian waters. At present, there appears to be sufficient amounts of water level and meteorological data on which to base preliminary calculations. The main obstacle is to develop techniques by which this data may be conveniently and validly incorporated into the storm surge models. At a later stage further data collection may be required but it is too early to assess these requirements accurately. These data requirements and the program of study will certainly be affected by present and future developments in instrumentation for the measurement of water levels, such as deep water gauges. The study of two-layer bodies of water may also require experimental verification.

A further look at tidal barriers in Northumberland Strait is being carried out, including a closer look at the amphidromic semi-diurnal tidal system. Preliminary calculations show a resonance point near the proposed Cape Tormentine site.

→ SCIENTIST IN CHARGE: K.B. Yuen

THIS SPACE FOR CCO INDEXING

INSTRUMENTATION

CANADA

1969 - 1970

PROJECT NAME			
Oceanographic Instrument Development			
LOCATION(S)			
AGENCY			
DEM&R, MSB, Atlantic Oceanographic Laboratory, Bedford Inst.			
PRINCIPAL COOPERATING AGENCIES			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1962	continuing	PROFESSIONAL 5 SUPPORT SERVICES 8
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>Miscellaneous projects</p> <p>To develop instruments and measuring systems to enable existing oceanographic research projects to develop more fully, or to enable new projects to be undertaken. There will be an emphasis on the measurements of the temperature of the ocean, with concentration on precision and equipment to investigate variability in the ocean. Measurement of salinity will also be undertaken.</p>			
<div style="text-align: right; margin-right: 10%;"> D.L. McKeown J. Brooke </div>			
SCIENTIST IN CHARGE: _____			
THIS SPACE FOR CCO INDEXING			



PROJECT FORECAST 1969- 1970

PROJECT NAME			Mooring Studies		
LOCATION(S)			Any sea		
AGENCY			DEM&R, MSB, Atlantic Oceanographic Laboratory, Bedford Institute		
PRINCIPAL COOPERATING AGENCIES			NIL		
DATE:	FROM	TO	EFFORT (IN MAN YEARS)		
	1969	Indefinite	PROFESSIONAL	1	
			SUPPORT SERVICES	1	
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)					
To study the defects in present mooring techniques with particular regard to high losses during extended periods and/or keep range stations.					
The first phase of this study is a regular pattern of several moorings made in the same configuration but with different materials. Recovery and inspection is taking place at set periods through the season and corrosion effects are being noted. Future study will involve the problems caused by mechanical defects such as overload of the buoy line and vibration of the wire.					
SCIENTIST IN CHARGE: J. Brooke, G.A. Fowler					
THIS SPACE FOR CCO INDEXING					

PROJECT FORECAST

1969 - 1970

PROJECT NAME Mooring Studies		
LOCATION(S)		
AGENCY DEM & R, MSB, Atlantic Oceanographic Laboratory, Bedford Inst.		
PRINCIPAL COOPERATING AGENCIES Nil		
DATE:	FROM	TO
	1968	Continuing
EFFORT (IN MAN YEARS)		
PROFESSIONAL		1
SUPPORT SERVICES		3
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)		
<p>A study of basic mooring configurations, the methods of laying and retrieving, the physical behaviour of the mooring for different current profiles and different arrays of equipment and materials. A study of the effects of corrosion aimed at increasing the life of a mooring over the present limit of 30 days.</p>		
G. A. Fowler D. Dobson T. Foote		
SCIENTIST IN CHARGE:		
THIS SPACE FOR CCO INDEXING		

PROJECT FORECAST

1969 - 1970

PROJECT NAME					
Deep Rock Core Drill					
LOCATION(S)					
Any sea					
AGENCY					
DEMAS, P.O., Atlantic Oceanographic Laboratory, Bedford Inst.					
PRINCIPAL COOPERATING AGENCIES					
Nil					
DATE:		FROM		TO	
		1965		Indefinite	
EFFORT (IN MAN YEARS)					
PROFESSIONAL				.....²	
SUPPORT SERVICES				.....⁴	
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)					
To produce a device with which cores of solid rock, about 2½ cms. diameter by 1 m. long, may be drilled from the seabed at depths of over 500 metres. The cores will be oriented with reference to the horizontal plane, and magnetic north. The whole device is self-contained, may be used by any normal research ship, and should be relatively inexpensive. The medium range unit (200 - 1000 fathoms depth) has been successfully used for scientific purposes and several units are to be built prior to licensing a manufacturer. The second phase of development will be the design of a deeper range drill unit for depths between 1000 and 2000 fathoms.					
C.S. Mason J. Brooke, Scientist in Charge					
THIS SPACE FOR CCO INDEXING					



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969 - 1970

PROJECT NAME

Remote Controlled Launch

LOCATION(S)

AGENCY

DEM&R, MSB, Atlantic Oceanographic Laboratory, Bedford Inst.

PRINCIPAL COOPERATING AGENCIES

Nil

DATE:

FROM

1966

TO

Continuing

EFFORT (IN MAN YEARS)

PROFESSIONAL

.....1.....

SUPPORT SERVICES

...2.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S).
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Development of a 14-foot radio controlled unmanned launch, intended for operation as a drone launch controlled from a mother ship. Initially the launch will serve as a vehicle for an echo sounder and design of a suitable sounder and towed transducer has commenced.

D. McKeown

→ SCIENTIST IN CHARGE: G. Fowler

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST

1969 - 1970

PROJECT NAME			Oblique Echo Sounder		
LOCATION(S)					
AGENCY			DEMAR, NSF, Atlantic Oceanographic Laboratory, Bedford Inst.		
PRINCIPAL COOPERATING AGENCIES			Nil		
DATE:	FROM	TO	EFFORT (IN MAN YEARS)		
	1968	continuing	PROFESSIONAL	1	
			SUPPORT SERVICES	1	
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)					
To develop an oblique echo sounder, for use in water depths up to 100 fathoms and ranges up to 800 yards. There will be an emphasis on a design for use in areas where the temperature depth variation is large. Initially the development will be directed to providing a tool for the Marine Geologist, although a long term aim is to produce an instrument useful in the preparation of hydrographic charts.					
D.L. McKeown P.G. Jollymore C.S. Mason					
SCIENTIST IN CHARGE:					
THIS SPACE FOR CCO INDEXING					



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME

Thermal Speed Sensor

LOCATION(S)

Universal

AGENCY

Aviation Electric Limited, Montreal, Quebec

PRINCIPAL COOPERATING AGENCIES

Royal Canadian Navy

DATE:

FROM

TO

EFFORT (IN MAN YEARS)

November 1965

September 1969

PROFESSIONAL

4
.....

SUPPORT SERVICES

.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

The Thermal Speed Sensor is used to measure fluid flow (liquid or gas.) It operates on the principle of a hot wire anemometer and consists of a transducer containing two temperature sensors, one of which is indirectly heated. The transducer can be mounted flush with the ship's hull or in a data gathering buoy. A fixed temperature is maintained between the transducers. The power required for the heating of the active transducer to maintain this temperature differential constant at various flow rates bears a fixed relation to the fluid velocity. The output of the control unit is a D.C. voltage proportional to fluid velocity.

A prototype of this Sensor has been built and tested in a water tunnel with very satisfactory results. Preliminary trials in a ship (CAF) have been conducted and further trials are being arranged.

F.M. Hanna

→ SCIENTIST IN CHARGE: Chief Engineer, R & D

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST

1969 - 1970

PROJECT NAME			
JUBAMARINE 16 Underwater Photography System			
LOCATION(S)			
AGENCY			
J.R. Bailey Enterprises, Agincourt, Ontario			
PRINCIPAL COOPERATING AGENCIES			
DATE: FROM TO EFFORT (IN MAN YEARS)			
1963		continuing	PROFESSIONAL 5 SUPPORT SERVICES
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p><u>Purpose:</u> To develop an underwater photographic system enabling divers to obtain U/W motion pictures with ease and reliability; by continual development work, to improve products; to develop further accessories compatible with the basic photographic system.</p> <p><u>General Equipment Characteristics</u> The JUBAMARINE 16 Models are cast aluminum underwater housings designed specifically for the Bolex BB 6 116 movie cameras. These housings enable divers to take motion pictures to a depth of 500 feet. There are two models:-</p> <p>1. The JUBAMARINE 16 Mark ICI has a self contained rechargeable battery pack to drive the camera motor, a large side door for easy film loading; and neutral buoyancy to permit minimum diver fatigue.</p> <p>2. The Mark IV has a similar configuration to the above, but the use of High Rate rechargeable batteries permits the incorporation of a 200 watt quartz iodine light.</p> <p>Due to the increasing use of U/W time lapse photography, we have recently developed a time lapse unit small enough to fit into the Mark IV housing and to operate from its batteries. Future development will include underwater lighting systems and a housing for the new 400 foot film capacity Bolex movie camera.</p> <p><u>MIDY-LIGHT 250</u> An underwater light for photographic use. Has self contained battery pack. Rechargeable. 250 watts at 3400 degrees Kelvin. Depth capability 350 feet.</p> <p><u>JUBA-570</u> A device to allow synchronisation of the shutter on the Bolex movie cameras with a flash unit (or timer). Ideally suited for u/w time lapse photography.</p> <p>—————> SCIENTIST IN CHARGE: J.R. Bailey</p>			
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969- 1970

PROJECT NAME

Buoy Design, Development and Manufacture

LOCATION(S)

AGENCY

Bristol Aerospace Limited, Winnipeg, Manitoba

PRINCIPAL COOPERATING AGENCIES

DATE:

FROM

1962

TO

continuing

EFFORT (IN MAN YEARS)

PROFESSIONAL

10

SUPPORT SERVICES

20

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Based on plastic reinforced fibreglass filament winding techniques developed at Bristol Aerospace Limited, buoys were designed and manufactured for the Bedford Institute of Oceanography. The buoy is 25" in diameter X 135" long and is designed to operate at a depth of 2,500 ft. with a buoyancy of 1,000 lbs; unique features include current direction seeking characteristics. Nose and tail sections are removable for instrument stowage and these compartments are flooded during operation.

The investigation of materials and the development of manufacturing techniques continue as part of Bristol Aerospace's materials technology program. Unique designs exist for pressure vessels in fibreglass reinforced plastic and steel, utilizing modular concepts, which may be adapted to satisfy most underwater requirements.

C.M. Hovey
Director of Engineering
and Quality Control.

→ SCIENTIST IN CHARGE: -----

THIS SPACE FOR CCO INDEXING



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969 - 1970

PROJECT NAME Oceanology Instruments Feasibility Study

LOCATION(S) For the Salt and Fresh Water Environment

AGENCY Electronics Division; Canadian Westinghouse Company Ltd.

PRINCIPAL COOPERATING AGENCIES

Ocean Research and Engineering Laboratory
Underseas Division
Westinghouse Electric Corporation
ANNAPOLIS, Maryland

DATE:	FROM	TO	EFFORT (IN MAN YEARS)
Timing not defined			PROFESSIONAL
			SUPPORT SERVICES

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

This division has been active in developing equipment for the marine environment since 1951. Although it is not currently engaged in any specific oceanology projects, the feasibility of undertaking development work in the following fields is being currently analyzed.

Sonar

depth measurement
bottom profiling
underwater beacons
signal processing

Sensors

magnetic anomaly
temperature sensitive

Instrument Packaging

pressure vessels
towed bodies
stabilized platforms

Instrument Servicing

calibration to NRC Standards
precision and specialized instrument repairs

Computers

Data logging/processing Ship control.

→ SCIENTIST IN CHARGE: -----

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST

1969 - 1970

PROJECT NAME Biological Oceanographic Instrumentation			
LOCATION(S) N/A			
AGENCY FRB, Marine Ecology Laboratory, B.I., Dartmouth (21)			
PRINCIPAL COOPERATING AGENCIES DEMR - B.I. DREA			
DATE: 1966	FROM 	TO indeterminate	EFFORT (IN MAN YEARS) PROFESSIONAL SUPPORT SERVICES 1 3
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.) An Acoustic Echo Counting system is being developed to be used for demersal fish distribution and population studies. The unit consists of a number of major parts: a transmitter receiver; a control unit; a digital data acquisition system; and a towed body with handling gear. This system will count the echos from each transmission in a vertical column from the seabed to approximately 20 meters above the bottom. This column can be subdivided to give vertical as well as horizontal echo distributions. Survey techniques are being developed and computer programs are being written for data reduction and data presentation.			
SCIENTIST IN CHARGE: S. Paulowich			
THIS SPACE FOR CCO INDEXING			

PROJECT FORECAST

1969 - 1970

PROJECT NAME			Auxiliary SONAR Equipment
LOCATION(S)			Fort Erie, Ontario
AGENCY			Fleet Manufacturing Limited, Fort Erie, Ontario
PRINCIPAL COOPERATING AGENCIES			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
For the last 5 years		Continuous	PROFESSIONAL SUPPORT SERVICES
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>We have developed and are in the process of developing various configurations of Sonar Hardware:-</p> <ul style="list-style-type: none"> (1) Towed Bodies for Variable Depth Sonar (2) Towing Winches for Variable Depth Sonar (3) Under the hull Sonar (4) Fairings for the Cable. <p>We have a number of professional engineers working on the development, a complete Engineering Department to convert the tools into the design of hardware and production and testing facilities to build the hardware.</p>			
<p style="text-align: right;">→ SCIENTIST IN CHARGE: A.S. Zakrzewski, P. Eng.</p>			
THIS SPACE FOR CCO INDEXING			

PROJECT FORECAST

1969 - 1970

PROJECT NAME			Design criteria for arctic offshore structures		
LOCATION(S)			Beaufort Sea and Canadian Arctic Waters		
AGENCY			Foundation of Canada Engineering Corporation Limited		
PRINCIPAL COOPERATING AGENCIES					
DATE:	FROM	TO	EFFORT (IN MAN YEARS)		
	1969	Present	PROFESSIONAL	1	.....
			SUPPORT SERVICES	2	.....
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)					
<p>Severe ice formations both onshore and offshore along the north coast of Canada and Alaska govern the design of marine and offshore structures in this region. To establish design criteria the probability of occurrence of various ice formations and possible extremes should be determined.</p> <p>If sufficient recorded observations would be available covering a long period, these design criteria depending on ice could be determined by direct statistics. Although ice observations have been carried out over a period of at least 100 years, data are insufficient for such approach because of the sporadic nature of the studies.</p> <p>Therefore it will be necessary to calculate the size and shape of ice formations and the magnitude of ice forces on the basis of oceanographic information. Our preliminary results indicate that the size and shape of ridges, ice pile-up and ice push-up on the shore and the gauging of ice mass in the ocean bed can be related to acting forces by similar criteria as used in geotechnical investigations.</p>					
SCIENTIST IN CHARGE: D. R. KOSILLIC, U. Ing., P. Eng.					
THIS SPACE FOR CCO INDEXING					



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME Nuclear Energy Package for Marine Uses

LOCATION(S)

AGENCY Garrett Marine, Rexdale, Ontario

PRINCIPAL COOPERATING AGENCIES

Internal hopefully in co-operation with Atomic Energy Commission Limited

DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1969	Indefinite	PROFESSIONAL $\frac{1}{2}$ SUPPORT SERVICES

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Garrett Marine is planning to establish a nuclear energy group in 1969 to investigate the application of nuclear power to:-

- (a) Buoys and buoy systems.
- (b) Commercial and military ships.
- (c) Undersea stations.

→ SCIENTIST IN CHARGE: Not assigned

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST

1969 - 1970

PROJECT NAME		
Standoff Replenishment System for Marine Operations		
LOCATION(S)		
Lakes and coastal seas		
AGENCY		
Garrett Marine, Rexdale, Ontario		
PRINCIPAL COOPERATING AGENCIES		
Internal		
DATE:	FROM	TO
	1965	Indefinite
		EFFORT (IN MAN YEARS)
		PROFESSIONAL . . . 2
		SUPPORT SERVICES
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)		
<p>Garrett Marine has developed a ship-to-ship replenishment system which is being promoted as a possible system for work boat to drill rig replenishment of materials and pipe in severe sea conditions where workboats cannot be positioned close to a drill rig. This system allows the workboat to stand off approximately 150 feet from the drill rig and transfer material over a tensioned headline. System can be expanded to transfer fuel and bulk transfer hoses from rig to workboat. A design is also under consideration for transferring pipe from a supply barge to a pipe laying barge.</p> <p>Various military versions are in service and under development. Drill rig configuration will be developed if sufficient interest develops.</p> <p>Approximately 10 professional people are employed on military configurations.</p>		
SCIENTIST IN CHARGE:		H. Potts, Senior Project Eng.
THIS SPACE FOR CCO INDEXING		



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969-1970

PROJECT NAME

Winches and Towing Machines for Marine Operations

LOCATION(S)

AGENCY

Garrett Marine, Rexdale, Ontario

PRINCIPAL COOPERATING AGENCIES

Internal with commercial customers

DATE:

FROM

1967

TO

Indefinite

EFFORT (IN MAN YEARS)

PROFESSIONAL

...4.....

SUPPORT SERVICES

.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Garrett Marine has developed a family of mooring winches and towing machines from 20,000 lbs. line tension to 200,000 lbs. line tension. These are being built for the following applications.

- (a) Mooring ships in seaways, at docks and at oil rigs.
- (b) Towing oil rigs from one location to another using a towboat equipped with Garrett towing machine.
- (c) Dynamic mooring of floating drill rigs and pipe laying barges (high capacity Garrett winches at each corner anchor rig to bottom of ocean).

Equipment has been built for two customers, others are under negotiations.

This product line can be applied to many areas of drilling platform positioning, buoy positioning, oceanographic surveys, pipe laying and underwater construction.

→ SCIENTIST IN CHARGE: W. Smillie, Chief Engineer.

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST

1969 - 1970

[illegible]



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME

Underwater Work Tools (for Pisces submersibles)

LOCATION(S)

AGENCY

International Hydrodynamics Co., Ltd., Vancouver, B.C.

PRINCIPAL COOPERATING AGENCIES

DATE:

FROM

1966

TO

1970

EFFORT (IN MAN YEARS)

PROFESSIONAL

....5....

SUPPORT SERVICES

...10....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Underwater Work Tools

The Company has tested and are using a number of tools in the field. Such as a two manipulator system utilizing 7 motions with a centre holding clamp, a low pressure high volume pump for excavating mud and sand down to five feet, 2½ in. cable cutter and various other attachments to fit the hydraulic manipulators.

The Company has under construction a low priced manned habitat complex and a diver lock out attachment for all its submersibles.

All vehicles have a standard equipment high definition sonar. 70 m.m. still photography and close circuit video T.V. recorders.

→ SCIENTIST IN CHARGE: -----

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST

1969 - 1970

PROJECT NAME		Pisces I - II - III	
LOCATION(S)		Offshore British Columbia Gulf of Mexico North Sea & English Channel	
AGENCY		International Hydrodynamics Ltd., Vancouver, B.C.	
PRINCIPAL COOPERATING AGENCIES			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1966	1970	PROFESSIONAL ...20.... SUPPORT SERVICES ...70....
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>The purpose of this project is to develop a series of submersible workboats capable of operating economically in depths ranging from the sea surface to 6,500 feet.</p> <p>Based on the engineering, testing, operation and cost information acquired in the Pisces I project, the current Pisces Project will result in more sophisticated vessels with greater depth and work scope capabilities.</p> <p>Three submersibles have been completed and are working in various parts of the world. The mark VI series Pisces are shallow (1000 ft) models with diver Lockout capabilities and large payload.</p> <p>The major changes in our deep boats are as follows:</p> <ul style="list-style-type: none">- depth range - 0 to 6,500 feet- crew 1; passengers 2 max. plus 2,000 lbs. of instrumentation and payload.- maximum speed 4 knots- pressure hull atmosphere endurance -- 100 man hours- equipped with a general purpose clamping arm with 400 lbs. maximum loading and a variety of manipulators and tooling.			
SCIENTIST IN CHARGE:			
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969- 1970

PROJECT NAME

Water Level (or Tide) Recorder

LOCATION(S)

AGENCY

DEMR, MSB, Oceanographic Research, Tides and Water Levels, Ottawa

PRINCIPAL COOPERATING AGENCIES

DATE:

FROM

TO

EFFORT (IN MAN YEARS)

1967

PROFESSIONAL

... 1/2 ...

SUPPORT SERVICES

... 1 ...

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

A submersible digital tide or water level recorder is being developed which will be capable of operating for periods in excess of one year at depths of up to meters. This instrument will record fluctuation of tide or water levels in mid-channel, lake or ocean, and greatly increase our knowledge of these phenomena. It may also be used for coastal observations where topography makes conventional gauges awkward or expensive to install.

A pressure transducer activates a battery operated punch paper taperecorder at a predetermined sampling rate. The unit will be housed in a water tight container of suitable strength fitted with an arrangement for transmitting the outside pressure to the pressure transducer.

→ SCIENTIST IN CHARGE: G.C. Dohler

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CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969 - 1970

PROJECT NAME			Development of Specific & Multi-purpose Oceanographic Winches		
LOCATION(S)					
AGENCY J. Swann (1963) Ltd., Vancouver, B.C.					
PRINCIPAL COOPERATING AGENCIES					
DATE:		FROM	TO	EFFORT (IN MAN YEARS)	
		1963	Continuing	PROFESSIONAL	.....10.....
				SUPPORT SERVICES	.....
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)					
<p>A full family of oceanographic winches ranging from a 5 HP Bathythermograph winch to a 100 HP Deep Sea Coring Winch are at various stages of development or under continuous modification, along with the following specific task winches.</p> <p><u>Seismic Hydrophone Winch</u> - with the hydraulic power supply incorporated in the winch structure.</p> <p><u>Gravimeter Winch</u> - with a split-drum feature that provides a continuous unbroken connection between the instrument and laboratory during the operation of the winch while the instrument is on bottom.</p> <p><u>Television Camera Winch</u> - requiring a fine degree of control through the entire speed range.</p> <p><u>T.V. Search/Recovery Winch</u> - with fine control throughout the speed range for T.V. search tasks; and high line pull required for recovering objects located during the search phase. (The salvage equipment structure could have a remote control T.V. Camera mounted on it).</p>					
				SCIENTIST IN CHARGE: W.G. Robbins	
THIS SPACE FOR CCO INDEXING					



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969 - 1970

PROJECT NAME Method and Apparatus for Applying Coating Materials
to Objects: Surface or Subsurface

LOCATION(S)

Vancouver, B.C.

AGENCY

Triton Concrete Protective Coatings Ltd., Vancouver, B.C.

PRINCIPAL COOPERATING AGENCIES

DATE:

FROM

TO

EFFORT (IN MAN YEARS)

1962

1970

PROFESSIONAL2.....

SUPPORT SERVICES2.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S).
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Equipment is being developed to apply cementitious coatings to underwater surfaces (e.g. tapered wooden piles, bastions, etc.) to protect or strengthen them or improve their appearance.

The cementitious material is applied (to piles) by pumping at a specific volume and pressure into a circular expandable casing which moves along the pile being coated. The coating undergoes an initial set as it approaches an open end of the casing and thereby creates a seal in the said open end. The resulting fluid pressure against the seal provides the motive force for the apparatus.

The prototype has performed successfully. Development continues in seals and metering of concrete pressures.

I. Birch &

→ SCIENTIST IN CHARGE: B.W. Irvine, P.Eng.

THIS SPACE FOR CCO INDEXING

METHODOLOGY, SERVICE AND
MISCELLANEOUS PROJECTS

PROJECT FORECAST

1969 - 1970

PROJECT NAME			
PRE-IRRADIATION CHEMISTRY - TRACE ELEMENT PROJECT			
LOCATION(S)			
BEDFORD INSTITUTE			
AGENCY			
ATLANTIC OCEANOGRAPHIC LABORATORY			
PRINCIPAL COOPERATING AGENCIES			
ATLANTIC OCEANOGRAPHIC LABORATORY			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1966	1971	PROFESSIONAL .1..... SUPPORT SERVICES .2.....
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>To try out several preconcentration techniques for the separation of trace elements from seawater and to evaluate and modify these techniques according to the requirements of neutron activation analysis. Preliminary tests of scavenging, solvent extraction, ion exchange already carried will be extended in detail. Particular attention is to be given to continuous counter current extraction of chelated metals and chelating ion-exchange resins.</p>			
SCIENTIST IN CHARGE: ---A.P. COOTE---			
THIS SPACE FOR CCO INDEXING			

PROJECT FORECAST

1969 - 1970

PROJECT NAME Chemical Services		
LOCATION(S) Bedford Institute		
AGENCY DEM&R, MSB, Atlantic Oceanographic Laboratory, B.I.		
PRINCIPAL COOPERATING AGENCIES Joint A.O.L., M.E.L., F.R.B. operation		
DATE:	FROM 1969	TO Indefinite
		EFFORT (IN MAN YEARS) <div style="display: flex; justify-content: space-between;"><div>PROFESSIONAL</div><div>... 1 ...</div></div> <div style="display: flex; justify-content: space-between;"><div>SUPPORT SERVICES</div><div>... 2½ ...</div></div>
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.) To supply facilities, methods and instruction in chemical techniques associated with physical studies of ocean circulation. To investigate experimental design for quality control and to develop and adapt chemical methods for this purpose. To undertake the determination of salinity for other agencies when required.		
SCIENTIST IN CHARGE: E.A. Levy		
THIS SPACE FOR CCO INDEXING		

PROJECT FORECAST 1969-1977

PROJECT NAME			
Identification Service, Marine Biology			
LOCATION(S)			
AGENCY			
DSS, NMC, Canadian Oceanographic Identification Service			
PRINCIPAL COOPERATING AGENCIES			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1967	continuing	PROFESSIONAL 2 SUPPORT SERVICES 3
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>The Canadian Oceanographic Identification Centre (COIC) was established at the National Museum of Natural Sciences in Ottawa in April 1967. As a multipurpose organization it will sort, identify and maintain hydrobiological collections at the request of Canadian research institutions with priority to those engaged in IBP programs. The zoo-plankton section is now in operation, with six staff members. Collections from both Atlantic and Pacific coastal regions are being processed. Collections and oceanographic data remain the property of the submitting institution unless otherwise designated. Taxonomic studies on the material by museum scientists and outside associates will lead to publication of manuals on the identification of Canadian marine fauna and flora. These services are nation wide and are available to CCO member organizations on request.</p> <p>The present effort is directed toward marine zooplankton. It is hoped to expand the service to include fresh water forms, benthos and phytoplankton. Also, it is hoped that the Centre may cooperate with Ottawa universities to provide training in taxonomy.</p>			
			Dr. E.L. Bousfield
→ SCIENTIST IN CHARGE; -----			
THIS SPACE FOR CCO INDEXING			



1 9 7 0

PROJECT NAME			
Physical chemistry of seawater			
LOCATION(S)			
Laboratory			
AGENCY			
FRB, Marine Ecology Laboratory, B. I., Dartmouth			
PRINCIPAL COOPERATING AGENCIES			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1961	Indefinite	PROFESSIONAL 1 SUPPORT SERVICES 1
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
Laboratory measurements of: (a) partial molar volumes of certain non-conservative salts in sea water; including calcium carbonates sodium silicate and calcium phosphate (for equilibrium and sea water density interpretations), (b) determination of compressibility of salts in sea water. To study the ionic characteristics of sea water of ocean depths. (c) determination of inorganic carbon components in sea water (Alkalinity, pCO ₂ , and total carbonate carbon). To study the carbon cycle ² in the ocean.			
			I. W. Duedall
→ SCIENTIST IN CHARGE: -----			
THIS SPACE FOR CCO INDEXING			

PROJECT FORECAST

1969 - 1970

PROJECT NAME Primary Production			
LOCATION(S) Coastal and oceanic environments			
AGENCY Marine Ecology Laboratory, Bedford Institute, Dartmouth			
PRINCIPAL COOPERATING AGENCIES			
DATE:	FROM 1969	TO continuing	EFFORT (IN MAN YEARS) <div style="display: flex; justify-content: space-between;"> <div> PROFESSIONAL SUPPORT SERVICES </div> <div style="text-align: right;"> 3 2 </div> </div>
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S). MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
Assessment of primary production (autotrophic and heterotrophic) using particle size measurements (coulter counter) and biochemical parameters.			
W.H. Sutcliffe, Jr. R.W. Sheldon —————→ SCIENTIST IN CHARGE: <u>A. Prakash</u>			
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME

Underwater Seismics

LOCATION(S)

AGENCY

Huntec Limited, Toronto, Ontario

PRINCIPAL COOPERATING AGENCIES

Defence Research Board

DATE:

FROM

1965

TO

1969

EFFORT (IN MAN YEARS)

PROFESSIONAL

10
.....

SUPPORT SERVICES

20
.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Primary Aim - To examine the relationship of measurable acoustic properties of water covered sediments to their physical properties.

The work has involved the development of new technology such as an automatic self-adjusting matched filter detector; special hydrophone elements and arrays; new hydroacoustic sound sources; a towed body, that is hydrodynamically active, and whose depth can be controlled from the deck of a ship; and special recording equipment.

→ SCIENTIST IN CHARGE: Roger W. Hutchins

THIS SPACE FOR CCO INDEXING

CANADA

1969. 1970

PROJECT NAME			
Atomic Absorption Spectrophotometry			
LOCATION(S)			
Laboratory			
AGENCY			
Institute of Oceanography, University of British Columbia			
PRINCIPAL COOPERATING AGENCIES			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1967	Continuing	PROFESSIONAL ... 0.25 ... SUPPORT SERVICES ... 0.5 ...
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S).) MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.			
<p>Applications of atomic absorption spectrophotometry to the determination of trace metals in seawater are being investigated.</p>			
→ SCIENTIST IN CHARGE: ----- E.V. Grill -----			
THIS SPACE FOR CCO INDEXING			



CANADA

CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969- 1970

PROJECT NAME Water Level Information Retrieval System

LOCATION(S)

AGENCY DEM&R, MSB, Oceanographic Research, Tides & Water Levels, Ottawa

PRINCIPAL COOPERATING AGENCIES

DATE: FROM

March 1970

TO

EFFORT (IN MAN YEARS)

PROFESSIONAL

1/4

SUPPORT SERVICES

3

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

To store all records relating to water levels, to computer, and design a system to retrieve the desired information.

This system will increase the efficiency of this Section to serve various research and operation organizations, and others.

→ SCIENTIST IN CHARGE: G.C. Dohler, L.F. Ku

THIS SPACE FOR CCO INDEXING



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST

1969 - 1970

[illegible]



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME

Documenting Computer Programs for Tides and Water Levels Projects

LOCATION(S)

AGENCY

DEM&I, M.C.R., Oceanographic Research, Tides and Water Levels,

PRINCIPAL COOPERATING AGENCIES

Ottawa

DATE:

FROM

TO

EFFORT (IN MAN YEARS)

August 1966

PROFESSIONAL

man-years/year

SUPPORT SERVICES

.....

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

Purpose: Computer Programs are available to abstract, check, disseminate, generate, store, retrieve, analyse and/or display tidal and water level data.

Computer Program Documentation is required for

- 1) Easier Program modification,
- 2) rewriting programs for a different computer,
- 3) reconstruction in case of loss of program,
- 4) use by other agencies.

→ SCIENTIST IN CHARGE: S.E. Eldring

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST

1969- 1970

PROJECT NAME			
Computer Program Development			
LOCATION(S)			
AGENCY			
DEM&R, MSB, Canadian Oceanographic Data Centre, Ottawa			
PRINCIPAL COOPERATING AGENCIES			
1) Computer Science Division, DEM&R, Ottawa 2) Central Data Processing Service Bureau, Ottawa			
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1965	continuing	PROFESSIONAL 11 SUPPORT SERVICES 1
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p>To develop systems and computer programs in support of oceanographic research projects in the Division of Oceanographic Research.</p>			
			H.R. Steeves
			→ SCIENTIST IN CHARGE: -----
THIS SPACE FOR CCO INDEXING			



CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969 - 1970

PROJECT NAME

Fracture of Ice

LOCATION(S)

Ottawa

AGENCY

NRC, Division of Building Research, Snow and Ice Section

PRINCIPAL COOPERATING AGENCIES

DATE:

FROM

1959

TO

Indefinite

EFFORT (IN MAN YEARS)

PROFESSIONAL

1/8

SUPPORT SERVICES

1/4

SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S),
MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)

The purpose of this project is to establish the factors that control the failure of ice. Observations will be continued on crack formation in polycrystalline ice during creep under compressive load, and the influence of crack formation on the deformation behaviour.

→ SCIENTIST IN CHARGE: L.W. Gold

THIS SPACE FOR CCO INDEXING

PROJECT FORECAST

1969 - 1970

[illegible]

CANADIAN COMMITTEE ON OCEANOGRAPHY
COMITÉ D'Océanographie du Canada

PROJECT FORECAST
1969-1970

PROJECT NAME			Bacterial Molecular Synthesis
LOCATION(S)			Laboratory
AGENCY			Dept. of Biological Sciences, Simon Fraser University
PRINCIPAL COOPERATING AGENCIES			National Research Council (grant)
DATE:	FROM	TO	EFFORT (IN MAN YEARS)
	1967	Indefinite	PROFESSIONAL . . . 3 SUPPORT SERVICES
SUMMARY (PURPOSE, THEORY, PROCEDURES, DATA COLLECTION, SEASON(S), MAJOR FACILITY OR VEHICLE, SPECIAL EQUIPMENT, ETC.)			
<p><u>Hydrostatic Pressure, Temperature and Salinity Studies on Macromolecular Synthesis and Growth by Marine Bacteria</u></p> <p>Investigations into the nature of psychrophilic and barophilic bacteria found in the ocean depths are of intrinsic value as well as an aid to investigations of mineral turnover and nutrient utilization in the marine environment. However, before one can adequately describe the functions of psychrophilic and barophilic bacteria in nutrient cycling in this environment one must have an adequate understanding of their biochemistry and physiological processes. A fruitful approach to this problem might be observations on the effect of hydrostatic pressure, temperature and salinity on protein, ribonucleic acid and deoxyribonucleic acid synthesis as well as cellular growth. Present studies indicate that of these three protein, synthesis is the most sensitive to hydrostatic pressure and temperature changes. However, much work remains to be done before one can truly appreciate the significance of these bacteria in the marine environment.</p>			
SCIENTIST IN CHARGE:			L.J. Albright
THIS SPACE FOR CCO INDEXING			

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<u>Abbreviations</u>		<u>Pages</u>
DEM&R	Department of Energy, Mines and Resources,	
GSC	Geological Survey of Canada, 601 Booth Street, Ottawa 4, Ontario.	100
DEM&R	Department of Energy, Mines and Resources,	109, 110, 173, 182, 184, 199,
MSB	Marine Sciences Branch, Tides and Water Levels Section, #8 Temporary Building, Carling Avenue, Ottawa 4, Ontario. (Mr. G.C. Dohler, Head)	200, 201, 226, 236, 237, 238
DEM&R	Department of Energy, Mines and Resources,	13, 14, 111, 112, 113, 174,
MSB	Marine Sciences Branch, 615 Booth Street, Ottawa 4, Ontario. (Dr. N.J. Campbell, Chief Oceanographer)	175, 176, 183, 202, 204
DEM&R	Department of Energy, Mines and Resources,	2, 19, 20, 21, 22, 23, 24, 25,
MSB	Marine Sciences Branch,	26, 27, 28, 29,
AOL	Atlantic Oceanographic Laboratory,	30, 31, 32, 33,
BI	Bedford Institute, Dartmouth, Nova Scotia. (Dr. W.L. Ford, Director)	34, 35, 36, 37, 38, 130, 179, 191, 193, 203, 205, 206, 207, 208, 209, 210, 211, 229, 230

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DEM&R MSB CODC	<p>Department of Energy, Mines and Resources, Marine Sciences Branch, Canadian Oceanographic Data Centre, 615 Booth Street, Ottawa 4, Ontario. (Mr. C.M. Cross, Head)</p>
	239
DEM&R POG	<p>Department of Energy, Mines and Resources, Pacific Oceanographic Group, Biological Station, Nanaimo, B.C.</p>
	171, 172
DEM&R MSB	<p>Department of Energy, Mines and Resources, Marine Sciences Branch, Frozen Sea Research Group, 825 Devonshire Road, Esquimalt, B.C. (Dr. E.L. Lewis, Head)</p>
	10, 11, 12
DEM&R	<p>Department of Energy, Mines and Resources, Gravity Division, Earth Physics Branch, Dominion Observatory, #3 Observatory Crescent, Ottawa, Ontario. (Dr. M.J.S. Innes, Chief)</p>
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<u>Abbreviations</u>		<u>Pages</u>
DND MARPAc	Department of National Defence, Headquarters Maritime Forces Pacific, Forces Mail Office, HMC Dockyard, Victoria, B.C. (Mr. M. Blake, Staff Officer, Meteorology and Oceanography)	132
DND MARPAc	Department of National Defence, Maritime Forces Pacific, Forces Mail Office, HMC Dockyard, Comox, B.C. (W.S.C. Wallace, Staff Officer, Meteorology and Oceanography)	131
DND DRB DREA	Department of National Defence, Defence Research Board, Defence Research Establishment, Atlantic, Forces Mail Office, HMC Dockyard, Halifax, N.S. (Dr. J.G. Retallack, Director-General)	48, 49

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<u>Abbreviations</u>		<u>Pages</u>
DND	Department of National Defence,	
DRB	Defence Research Board,	
DREO	Defence Research Establishment Ottawa, 125 Elgin Street, Ottawa 4, Ontario. (Mr. T.A. Harwood, Head)	3, 4
FRB Arctic	Fisheries Research Board of Canada, Arctic Biological Station, P.O. Box 400, Ste. Anne de Bellevue, Quebec. (Dr. A.W. Mansfield, Acting Director)	6, 7, 8, 9, 80, 81, 82
FRB St. Andrews	Fisheries Research Board of Canada, Biological Station, St. Andrews, N.B. (Dr. J.M. Anderson, Director)	65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79
FRB St. John's	Fisheries Research Board of Canada, Biological Station, St. John's, Newfoundland. (Dr. W. Templeman, Director)	83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99

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FRB	Fisheries Research Board of Canada,	50, 51, 52,
MEL	Marine Ecology Laboratory,	53, 54, 55,
	Bedford Institute,	56, 57, 58,
	Dartmouth, N.S.	59, 60, 61,
	(Dr. L.M. Dickie, Director)	62, 63, 64,
		217, 232, 233
FRB	Fisheries Research Board of Canada,	133, 134, 135,
POG	Pacific Oceanographic Group,	136, 137, 138,
	P.O. Box 100,	139, 140, 141,
	Nanaimo, B.C.	142, 143, 144,
	(Mr. A.J. Dodimead, Acting	145, 146
	Oceanographer-in-Charge)	
DSS	Department of Secretary of State,	
NMC	National Museums of Canada,	
	National Museum of Natural Sciences,	
COIC	Canadian Oceanographic	
	Identification Centre,	
	McLeod and Metcalfe Streets,	
	Ottawa 4, Ontario.	231
NRC	National Research Council of Canada,	
DBR	Division of Building Research,	
	Snow and Ice Section,	
	Montreal Road,	
	Ottawa 7, Ontario.	240, 241

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DOT	Department of Transport, Ice Forecasting Central, P.O. Box 792, Halifax, N.S. (Mr. W.E. Markham, Officer-in-Charge)	101
DOT Met. SDL	Department of Transport, Meteorological Branch, Satellite Data Laboratory, Administration Building, Box 159, Toronto International Airport, Toronto AMF, Ontario. (Major C.I. Taggart, Head)	190

INTERNATIONAL

IPSFC	International Pacific Salmon Fisheries Commission, P.O. Box 30, New Westminster, B.C. (Dr. Lloyd A. Royal, Director)	170
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AINA	Arctic Institute of North America, 3458 Redpath Street, Montreal 25, Quebec. (Brigadier H.W. Love, Director)	1
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PROVINCIAL -----

Atlantic Tidal Power Programming Board, Centennial Building, Suite 601, 1645 Granville Avenue, Halifax, N.S. (Mr. F.L. Lawton, Study Director)	39
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UNIVERSITY -----

Bellairs Research Institute of McGill University, St. James, Barbados, British West Indies. (Dr. John B. Lewis, Director)	40, 41, 42 43, 44, 45, 46, 47
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IOUBC	Institute of Oceanography, University of British Columbia, Vancouver 8, B.C. (Prof. G.L. Pickard, Director)	147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 180, 181, 194, 195, 196, 197, 198, 235
IODal.	Institute of Oceanography, Dalhousie University, Halifax, N.S. (Prof. G.A. Riley, Director)	102, 103, 104, 105, 106, 107, 108
MSC McGill	Marine Sciences Centre, McGill University, Montreal, Quebec. (Prof. M.J. Dunbar, Chairman)	15, 16, 17, 18, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124
McMaster	McMaster University, Department of Geology, Hamilton, Ontario. (Prof. J.R. Kramer)	185, 186, 187, 188, 189

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Memorial	Memorial University, Marine Sciences Research Laboratory, St. John's, Newfoundland. (Prof. F.A. Aldrich)	125, 126, 127, 128, 129
	<u>Also</u> - Department of Biology	
SFU	Simon Fraser University, Department of Biological Sciences, Burnaby 2, B.C.	177, 178, 242

